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Technical Association Meets at Erie, Pa.

Representative Technical Men From All Over the Country and Canada Attend Fall Meeting of TAPPI—President M. A. Krimmel, Assistant Director of the Laboratories of the Hammermill Paper Co. Presides at All Sessions at Which Papers of Unusual Technical Interest Are Presented

[FROM OUR SPECIAL REPRESENTATIVE]

ERIE, Pa., September 8, 1930—Nearly three hundred members and friends of the Technical Association of the Pulp and Paper Industry attended the fall meeting at Erie, Pa., on September 3 to 5. The dates selected proved to be a fortunate choice and typical TAPPI weather prevailed with plenty of sunshine and ideal temperatures.

All the sessions were capably presided over by Maxamilian A. Krimmel, assistant director of laboratories of the Hammermill Paper Company and president of the Technical Association. The headquarters of the meeting was at the Lawrence Hotel.

Local Committee

Under the able general chairmanship of Henry F. Obermanns, general superintendent of the Hammermill Paper Company the local committee provided one of the best arranged and successful meetings the association has had.

In addition to Mr. Obermanns, the local committee included F. P. Klund, J. A. Bowers, W. F. Bromley and P. W. Herrick in charge of administration, C. H. Reese, H. M. Holmes and Eric Wahlforss in charge of arrangements, Bjarne Johnsen, A. O. Spierling and C. R. Tait in charge of the program, John L. Parsons, H. B. Dawson and E. E. Neubig in charge of publicity, Mrs. M. A. Krimmel in charge of ladies and B. L. Kassing, J. J. Sullivan, A. F. Klein and L. F. Randecker in charge of sports.

Changes in Articles of Organization

To enable the association to be of more definite service to its members it was voted to make changes in the Articles of Organization that would provide for the formation and financing of territorial sections.

Following are the changes that were made.

ARTICLE X—SECTIONS

(present form) To carry out more effectively the aims of the Association, sections may be established wherever there are enough members to form an adequate local organization. (no changes proposed).

(Present) 1. The formation of such sections may be authorized by the Executive Committee upon the written petition of *five* or more members. A section shall be known as the .....(name of place) section of the Technical Association of the Pulp and Paper Industry.

(Proposed) 1. It is proposed that the word *three* be substituted for the word five in the preceding paragraph.

(Present) 2. The officers of each section shall consist of a chairman and secretary and such others as may be necessary.

(Proposed) 2. The officers of each section shall consist of chairman and secretary-treasurer and such others as may be necessary, all of whom shall be active, associate or junior members of the Technical Association of the Pulp and Paper Industry.

(Present) 3. Any section may, subject to the approval of the Executive Committee, adopt for its own government such by-laws as it may find expedient, including the qualifications for *associate* members of the section, provided that no part thereof shall conflict with the Articles of Organization of the Association.

(Proposed) 3. It is proposed that the word *affiliated* be substituted for the word associate.

(Present) 4. No money from the general funds of the association shall be appropriated or used for the expenses of a section.

(Proposed) 4 An amount of money which shall not exceed ten per cent of the membership dues of Technical Association members of the section may be refunded to each section applying to the Executive Committee for such funds. These funds shall be used only to defray the office operating expenses of the section. An audited account of the expenditure of these funds shall be submitted to the Executive Committee not later than the first day of February of each year. At this time, application, signed by the chairman and the secretary-treasurer of the section, for funds for the coming year must be submitted.

(Present) 5. The Executive Committee shall have the right at any time to rescind the authorization of any section and to terminate its existence. (no proposed change).

Suggested Outline Articles of Organization of a Section

ARTICLE I—NAME

(Present) The section shall be known as the .....(name of

place) section of the Technical Association of the Pulp and Paper Industry, hereafter referred to as the section. (no change proposed).

ARTICLE II—MEMBERSHIP

(Present) Membership in the section shall consist of members and associate members.

(Proposed) Membership in the section shall consist of members and affiliated members.

(Present) 1. Members only shall be entitled to vote and hold office in the section, otherwise the privileges shall be the same for both classes of members.

(Proposed) 4. Members and affiliated members of a section shall be entitled to vote but only members may hold office otherwise the privileges shall be the same for both classes of members.

(Present) 2. A member shall be actively engaged in the manufacture of pulp or paper or in work of a technical character in industries or institutions related to pulp and paper manufacture.

(Proposed) 1. A member of a section shall be an active, associate or junior member of the Technical Association of Pulp and Paper Industry.

(Present) 3. An *associate* member shall be anyone interested in pulp and paper manufacture or in industries or institutions related to it.

(Proposed) 2. An *affiliated* member shall be any person interested in pulp and paper manufacture or in industries or institutions related thereto but who is not a member of the Technical Association of the Pulp and Paper Industry.

(Present) 4. Applications for admission to membership in the section shall be passed upon by the executive committee of the section (or a committee appointed for the purpose). No change *other than to make this item 3* rather than item 4.

Articles III to IX (no changes proposed).

Vapor Transmission Through Papers

The first paper on the program was entitled "Vapor Transmission Through Papers" by Allen Abrams and Warren A. Chilson of the Marathon Paper Mills, Rothschild, Wis. Vapor transmission through papers is largely dependent on the vapor pressure differential on the two sides of the sheet. Water vapor transmission is therefore largely affected by temperature and humidity. A suggested tentative method is to expose the paper to vapor at a fixed temperature and with a definite vapor pressure differential, the loss in weight over a certain period being computed to grams per 100 square inches per 24 hours. Homogenious papers have vapor transmission rates generally proportional to their water penetration qualities but this relation does not hold for heterogeneous papers.

Paper Acidity

B. L. Wehmhoff, technical director of the Government Printing Office, Washington, D. C., read a progress report on the determination of pH values and the total acidity of paper. The research work on this problem is being carried on jointly by the Bureau of Standards, Bureau of Chemistry and Soils and the Government Printing Office. Studies are being made on 100 per cent rag ledger, 100 per cent rag machine-finish book, 50 per cent rag machine-finish book, sulphite bond, kraft wrapping, and newsprint. The results obtained with commercial colorimetric sets have been found to be inconsistant and irregular. When it is desirable to use such sets it is recommended that isohydric indicators adjusted to 0.2 pH intervals be used.

The Colorscope

The first general session ended with the reading of a paper by Prof E. F. Snyder of New York University physics department on "Color matching with the Colorscope," written by Prof. H. H. Sheldon. Following the reading of the paper the Colorscope was exhibited and its method of operation demonstrated.

The Colorscope is based essentially upon the ability of the photoelectric cell to differentiate light both as to color and intensity and to cause a corresponding electrical response through suitable electric circuits. By comparing any color with a standard it is possible by means of this machine to determine not only how close the color match may be but also to what extent specific colors must be added to obtain the desired result. Aside from matching colored paper and textiles the Colorscope is useful for doing the same with powders and liquids.

General Electric Company Hosts

Following the technical meeting buses transported the members to the plant of the General Electric Company in Erie where a luncheon was tendered by the G. E. to TAPPI. Following this for the next few hours the members, divided into groups were

Group Picture of Members and Guests at the Annual Fall Meeting of

guided through the well laid out and immense factories where G. E. refrigerators and electric locomotives were being manufactured. L. C. Reynolds, chairman of the TAPPI committee on management methods was present and had the distinction of being the first man on the G. E. payroll at Erie when he went there many years ago to build and manage the G. E. plant.

Committee Chairmen Meet

On Wednesday afternoon the division and committee chairman of the association met at the Lawrence Hotel to discuss the new plan of committee organization and development. The enthusiasm displayed in the discussion of President Krimmel's outline of plans was highly encouraging and indicated that the organization will be assured of competent leadership. It was suggested that the main objective of each committee shall be to observe and study contemporary technical developments and to report them annually. In addition to this it is expected that each committee will make special studies of problems of interest and value to the industry and its branches and eventually propose for association adoption standard specifications and procedures. In this way it will be possible for the committees to have definite objectives which will permit them to make conspicuous progress each year.

Across Lake Erie

One of the most interesting features of the meeting was the boat ride on Lake Erie to Port Dover, Ontario and return on the Steamer Keystone. The trip was delightful as the boat made its way through smooth waters bathed in white moonlight.

No arrangements were made for landing on the Canadian shores because of the lateness of the hour. The return trip was a continuence of pleasure which was amplified by an excellent ball room entertainment.

Pulp Evaluation

The papers presented during the Thursday morning session, with one exception, dealt with the properties of pulp wood and wood pulp.

First on the rogram was a paper on "Evaluation of European Pulp" by W. F. Moore of the U. S. Testing Company and W. R. Willets of the Western Electric Company. The data upon which the paper was based was obtained in consequence of studies made as part of the Pulp Testing Committee's program of work.

Tests were made on 21 well-known brands of European pulps, including one bleached sulphite, nine unbleached sulphites and eleven krafts. In the course of the work, interesting results were obtained on the beating characteristics of pulps that had previously been over dried, on the blending of fast and slow hydrating pulps, and on the strength properties on old and new lots of pulp of the same brand. It was pointed out that, in general, if two pulps are of a similar type, the faster hydrating will have a higher and steeper Mullen curve and a lower tearing curve than the slower hydrating pulp.

Of considerable interest during the current year was the publishing of a book by the Technical Section of the Papermakers' Association of Great Britain and Ireland on the pulp evaluation procedure accepted by that organization as its official standard. One of the principles involved in the preparation of this work was James d'A. Clark of the Bowaters Paper Mills in England. Mr. Clark has recently taken a position as development engineer with the Mead Corporation in Chillicothe, Ohio. Provision was therefore made in the program to have him give a brief outline contrasting the British standard method of sheet making and testing with the present tentative TAPPI and Canadian methods. Particular attention is given to the subject of disintegration, pressure and testing of the sheets.

D. S. Davis, also of the Mead Corporation, made another excellent contribution to the literature of freeness testing in his paper, "The Inter-Conversion of Freeness Scales." It was pointed out that at least six types of freeness testers are in use today in the United States and Canada. No two types of testers agree in freeness scale and the situation is further complicated by the fact that with some the freeness number is the volume of water draining through the fiber mat above a certain rate. With another it is proportional to the difference between this volume and a constant and with still another it is the time required for a certain volume to drain through the mat. Furthermore, the standard conditions for testing differ widely and there are two standard temperatures and three standard consistencies in use. To aid technical men in interpreting data obtained with one tester in terms of similar data that may be obtained with different type testers, curves and mathematical equations were prepared showing the interconversion of scales for six testers.

Pulp Wood Evaluation

"Evaluation of Pulp Wood" was the subject of an unusually interesting paper by Bjarne Johnsen and Charles H. Reese of the Hammermill Paper Company laboratories. Specific attention

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was given to spruce and balsam expressed in terms of yield by weight, yield by volume, physical and chemical properties.

Comparing laboratory results with practical mill operation the authors state that the difference in percentage yield of pulp obtained in mill operation and the cellulose content of wood as determined by the usual methods is due to the difference in composition of the resulting product, chiefly because of the removal of hemi-celluloses in commercial operation. Another reason for this variance between results obtained by standard methods of cellulose determination and by mill practice is that in commercial cooking such factors as temperature, pressure and composition of cooking liquor are intentionally varied to produce pulp of different qualities, whereas a definite procedence is followed in determining cellulose in wood. There are at present no analytical methods for cellulose determination which will give values which can be directly translated into yields obtainable in commercial operation.

Most mills purchase wood by the cord. Tests on pulp wood made at Hammermill which included measurement of sticks per cord, percentage of actual length and diameter of sticks, trim, amount of cull wood, and actual cubic feet per cord. Having obtained the yield of pulp per unit volume of wood and having determined the physical and chemical properties of pulp produced, the relative price at which wood for pulp production should be purchased can be determined.

Other results of a practical nature which may be calculated on the variation in capacity of a mill caused by differences of quality of the wood being cooked, the increase of steam required per ton of pulp when wood of low specific gravity is cooked or wood requiring high temperature is digested.

Color Analysis

The final paper of this program was entitled, "The Razek Mulder Color Analyzer for Paper." The author, Jackson Burgess, is treasurer of the Burgess-Parr Company of Chicago, Illinois.

As in the case of the Colorscope described at the Wednesday meeting, provision was made for the full scale demonstration of this device as well. Exact color specification by use of spectrophotometric curves has been recognized as possible by physicists, but the application of these curves to industrial problems has only recently become practicable.

The color analyzer is a photoelectric spectrophotometer adapted for making scientific determinations of the color of any material. By use of it the color may be analyzed, plotted on coordinates, and by this way specified by the most accurate method known to science. Two whites, for example, may appear to be identical to the human eye, but if a difference exists it will be indicated clearly by means of the curve plotted by the analyzer.

L. C. Reynolds Luncheon Address

The Thursday afternoon program began with a luncheon at the Erie Masonic Temple. A feature of the luncheon period was the very enthusiastic address by L. C. Reynolds, comptroller of the American Writing Paper Company of Holyoke, Mass.

Speaking as the chairman of the newly formed TAPPI Management Methods Committee, he indicated that the committee came into being because there was an evident feeling that the technical work of the Association ought to be coordinated with the other phases of active management of our industry, as represented by production, sales and finance.

The work of a similar organization, the Society of Automotive Engineers, was cited The latter premised its activities on a foundation of standardization, particularly of raw materials. The general objections, advantages and uses of standards were indicated. Although human relations, plant operating efficiencies, inventory control, wages, etc. are all important subjects and are entitled to the fullest consideration it was pointed out emphatically that the foundation for modern management methods is standardization.

Visit to Hammermill

Buses transported the Tappists to the plant of the Hammermill Paper Company located in a beautiful section on the Lake Erie shore.

Upon arriving the entire group was arrayed for the panorama photograph shown in this report. The background of the picture is the handsome building housing the Hammermill laboratories, one of the finest of its kind and size in the industry.

A well organized and highly competent corps of guides were in waiting to take the visitors through the mills. Each guide escorted eight to ten individuals and carefully explained the details of equipment and operation as they led the way from the wood preparation room, through the sulphite mill, paper mill and finishing room. Many comments were made regarding the courtesy and helpfulness of the guides.

Hammermill Dinner

A real hospitable Hammermill day was climaxed by a delicious dinner tendered by the Hammermill Paper Company to the Technical Association.

Henry F. Obermanns as general chairman introduced the toastmaster, M. A. Krimmel, president of TAPPI. In doing so he told an interesting story concerning the founding of the association in Chicago in 1915 by five men who were vitally interested in the welfare of the pulp and paper industry in this country.

Prior to the formation of what was to first be known as the Technical Section of the American Paper and Pulp Association Mr. Obermanns cited the fact that in 1913 two American delegates to a meeting of the German Association of Chemists and Engineers of the Paper Industry returned to the United States with a commission to organize an American section of the German organization. The outbreak of the war prevented this from happening but it created an interest in the subject that resulted altimately in the formation of TAPPI.

Mr. Krimmel served well as toastmaster and introduced as speaker of the evening Dr. Harrison E. Howe, editor of the Journal of Industrial and Engineering Chemistry who took for the subject of his talk "Big Industries." In his address Dr. Howe first drew an awe inspiring picture showing the great magnitude of some American industries. One factor was common to all of these great enterprises, namely research the insurance for perpetuation. One company expended as much as twelve millions annually on research. In the United States about one hundred million dollars is spent for research. The hope of the pulp and paper industry must rest in research.

Following the address Allen Abrams of Marathon Paper Mills expressed on behalf of the individuals present and the Technical Association their appreciation of the courtesies extended by the Hammermill Paper Company.

The greeting of the Canadian Technical Section were extended by E. Parke Cameron of Montreal.

Medullary Rays

The first paper presented at the Friday morning session was one carried over from the program of the previous day. G. H. Ritter, F. A. Simmonds and R. M. Seborg of the U. S. Forest Products Laboratory jointly prepared a paper entitled "The Effect of Pebble Mill Treatment on a Pulp Prepared by the Chlorination Method." The paper was read by Mr. Simmonds who reported that an increase in concentration of chemical in a sulphate cooking liquor, for example, causes a decrease in the ray cell content of the resulting pulp. This suggests that the chemical constitution of the cells is intermediate between the stable cellulose and the easily hydrolyzed hemi-celluloses.

Washing a pulp in a blow pit slightly reduces its ray cell content. Ordinary mechanical processing has little effect on the ray cells other than slightly reducing their sizes. In commercial operations the larger number of ray cells are probably lost through the wires, on the wet machines, thickeners or screens,

being carried away with the white water. Bleaching destroys a certain per cent of the ray cells.

Water Clarification

In connection with the visit to the Hammermill plant it was of particular interest and value to have a paper on the program by F. E. Devine of the Hammermill Paper Company, entitled, "Cooperation Factors in Water Clarification." In this paper, the author described the source of water supply for the mills and the steps that are taken to assure its suitability for mill use.

Water from Lake Erie is pumped to a settling basin of 1,700,000 gallons capacity, from which it flows by gravity to the filter plant which is composed of 25 rapid sand filters. In the operation of the water works many interesting problems have arisen, one of the most difficult being that of coagulation or sedimentation. Alumium sulphate has been found to be the best coagulent that can be used with lake water.

At certain seasons the alum proves to be inadequate as a coagulating agent. Irrespective of the amount of alum added during part of the summer season, the alum formerly passed through the filters and settled in the pipes. As a result of a number of laboratory tests a procedure was worked out that was applied to the full scale operation. Alum is now added to the water at the entrance to the settling basin and now no water passes that is in excess of one part per million of turbidity in the filtered water.

Consistency by Light Absorption

An interesting contribution to the program was the paper prepared by H. W. Johnston, O. Maass and J. S. Hart of the Forest Products Laboratories of Canada, Montreal, P. Q. This paper outlined the preliminary results obtained from an apparatus for consistency determination by light absorption. It was shown that the light absorbed will vary with consistency, particle size and the nature of the stock employed. These variables are all inter-related, but the amount of light absorbed by any stock, at any given consistency is a reproducable value.

Bleaching and Viscosity

Another excellent paper was contributed by the Forest Products Laboratories of Canada entitled "The Influence of Bleaching on Viscosity" by J. H. Ross and L. H. Yorsten. This paper deals with an attempt to utilize the cuprammorium viscosity test described by Bialkowsky in Technical Association Papers, Series XIII (1930) as a means of fixing the proper set of conditions to be used in arriving at a pulp bleached to a shade desired and estimated by means of optical instruments.

Air, Heat and Moisture in Machine Room

A. S. Goodrich and H. G. Brehme, engineers of the Hammermill Paper Company read an excellent paper entitled, "Air, Heat and Moisture Balance for Paper Machine Room." This paper describes the general features of the air and steam supply, the method of making the various tests and the data obtained.

The results were conveniently tabulated and showed among other things the pounds of paper dried and the pounds of water evaporated per square foot of total and effective area. The possible sources through which heat, air and water could enter the machine room was stated as follows: steam from paper machine driers, room air supply (*a.* main air supply fan, *b.* drier pit supply fans for each machine, *c.* calender fans for each machine, *d.* adjacent rooms through doorways and *e.* out of door leakage), power consumed as friction and converted into heat, paper and steam to wire and dandy roll.

To outlets for heat, steam and air include condensate from the drier circulation system, discharge from vacuum pump, exhaust fans of cross ventilation system for each paper machine, ridge ventilator, stack ventilator, paper and building losses.

THE MEN WHO PUT THE TAPPI MEETING OVER
Left to Right: Charles H. Reese, Arrangements, Bjarne Johnsen, Program, Henry F. Obermanns, General Chairman, John L. Parsons, Publicity, F. P. Klund, Administration

ALLEN ABRAMS
Technical Director, Marathon Paper Mills, Rothschild, Wis. Member TAPPI Executive Committee.

Pulping Eastern Hemlock

W. H. Monsson and G. H. Chidester reported the work done at the Forest Products Laboratory at Madison in which the effect of cooking, according to different types of temperature curves of eastern hemlock by the sulphite process, was studied. Applying the different types of temperature curves to the pulping of hemlock results in the same general trends that were obtained in the earlier work with spruce, except that relatively high intermediate temperatures are desirable for pulping hemlock for a low bleach requirement, at least when the total cooking time is less than 12 hours.

Under the same conditions of pulping, the yield and strength of pulp obtained from eastern hemlock were lower than those obtained from white spruce, and the bleach requirement higher.

Bleached Sulphate Pulp

C. E. Curran, R. H. Doughty and M. W. Bray of the U. S. Forest Products Laboratory were the authors of a paper entitled "White Paper from Southern Pines—A Modified Bleaching Process for Easy-Bleaching Sulphate Pulps." The conclusions that were drawn indicate that a two-stage process using chlorine water in the first stage and bleach powder in the second stage gave the best results as regards bleach economy, color, strength and chemical properties of the bleached pulps. The optimum conditions for the use of this process on the special pulps studied were sharply defined. It is believed that similar optimum conditions may be worked out for two-stage hypochlorite bleaching.

Paper Machine Variables

L. M. Yoerg and R. W. Pattison of the American Writing Paper Company read a paper entitled "Paper Machine Equipment and Operation." This paper was the first contribution from the newly formed TAPPI paper manufacture committee of which Mr. Yoerg, general superintendent of the A. W. P. Co., is chairman. By way of introduction the authors indicated that the paper was of an elementary nature and was prepared partly to be of value to the younger members of the association and also as an effort to outline the scope of the committee's work, particularly in regard to the finer grades of paper. Future papers will go into considerable detail relative to the details mentioned.

Papers Read by Title

Because the program was crowded several excellent papers had to be read by title only. Copies of them, however, were preprinted and were available for study.

One of these papers by F. T. Carson and L. W. Snyder of the U. S. Bureau of Standards was entitled, "Directional Designation in Physical Tests." It was prepared by request to help clear up the confusion that appears to exist relative to the interpretation of certain physical tests. For example, the directional designation prescribed in the official method for tearing resistance, but which is at variance with widespread practice in the paper industry, appears logically correct because (1) the direction designated as that tested is the direction of the fibers which resist the rupturing force, (2) it is in conformity with the commonplace that paper is stronger in the machine direction than in the cross direction, and (3) it permits uniformity of definition in that it prescribes for all the strength tests that it shall be understood that the line of rupture is at right angles to the direction designated as the one tested.

Sidney E. Meyers, development engineer of the Merritt Engineering Company of Lockport, N. Y., prepared a paper entitled, "Automatic Consistency Control in the Paper Mill" in which the density controlling device developed by his company is described. For the most part consistency regulators operate by being mechanically responsive to the flow-resistance of stuff passing through them or by the rotation of a driven member which meets with more or less resistance as it passes through relatively quiet stock. With but one exception they all operate under some system of mechanical arrangement which acts in response to density resistance. The specific device described by the author obtains its regulating impulse from an agitator revolving at constant speed within the stuff to be regulated.

Blank-Stoiler, Inc.

FREDERICK C. CLARK
Consulting Engineer. General Chairman of TAPPI Operating Division.

NORMAN CLARK
Supt. of Coating Mill Standard Paper Mfg. Co., Richmond, Va. Chairman of TAPPI Finishing, Processing and Converting Committee.

"Continuous Vacuum Filters in Closed White Water Systems" was the subject of a paper by A. O. Bragg of Oliver United Filters, Inc. In this article the criteria by which white water systems and equipment should be judged are indicated. These include initial cost, clarity of effluent, return on investment, maintenance cost, cost of labor for power consumption, floor space required, simplicity of operation, ruggedness of construction, amount and value of stock recovered, amount of water to be handled, mill tonnage, frequency of color changes and dependability of the recovery process.

Exhibits and Plant Visits

Special provision was made for the exhibiting of new and interesting equipment at the Lawrence Hotel. As a result of special invitation many members visited the following plants on Friday afternoon and Saturday morning: Burke Electric Co., Erie City Iron Works, Erie Forge and Steel Company, Erie Malleable Iron Company, Hammermill pulpwood docks, H. F. Watson Company, Heisler Locomotive Works, Jarecki Manufacturing Company, Northern Equipment Company, Skinner Engine Company, and the Union Iron Works.

Recreational Program

Friday afternoon and evening was devoted to social activities. These included a golf tournament at the Lake Shore Country Club and a quoit tournament, horseback riding, bathing, hiking, baseball, etc. at the Presque Isle Peninsula State Park. Following these events there was a gathering of the clans at the out door dining hall on the peninsula where famous Lake Erie pike and whitefish were featured on the menu. To many this was a fitting end of the program, after which the members returned to their homes and mills.

Ladies' Program

Under the able guidance of Mrs. M. A. Krimmel and her competent committee the visiting women were amply entertained. A considerable part of their program coincided with the general meeting program which has been described. This included the visit to the General Electric Company plant on Wednesday as well as the boat ride to Port Dover, Ontario.

On Thursday there was a motor drive through the new residential part of Erie and Glenwood Park to Hunters Lodge for a card party and luncheon. In the afternoon the Hammermill Paper Company mills were visited and a group photograph of men and women was taken. This was followed in the evening by a dinner

at the Shrine Club, after which there was a theater party at the Erie Strand.

Friday morning was devoted to an inspection trip through the new Strong-Vincent High School which has many interesting features of modern educational equipment. Following this luncheon was served at the Pussey Willow Tea Room and the balance of the day was devoted to the events on the peninsula which have already been described.

In addition to Mrs. M. A. Krimmel, chairman, the ladies' committee included Mrs. J. A. Bowers, Mrs. W. F. Bromley, Mrs. W. T. Brust, Mrs. H. B. Dawson, Mrs. P. W. Herrick, Mrs. H. M. Holmes, Mrs. F. P. Klund, Mrs. E. E. Neubig, Mrs. H. F. Obermanns, Mrs. J. L. Parsons, Mrs. C. H. Reese, Mrs. A. O. Spierling, Mrs. C. R. Tait and Mrs. N. W. Wilson.

Among Those Who Attended

Among the members and guests who attended were the following:—

Donald I. Adcock, Individual Drinking Cup Co., Easton, Pa.; Mr. and Mrs. Allen Abrams, Marathon Paper Mills Co., Rothschild, Wis.; Carl Apelgren, Taggart Bros. Co., Oswego, N. Y.; Mr. and Mrs. W. H. Artz, Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.; B. Alder, Hammermill Paper Co., Erie, Pa.; E. Aldstadt, Hammermill Paper Co., Erie, Pa.; J. J. Aubin, Hammermill Paper Co., Erie, Pa.

Parker K. Baird, U. S. Forest Products Lab., Madison, Wis.; C. M. Baker, American Pulp & Paper Association, Madison, Wis.; R. S. Baker, Consulting Engineer, Ottawa, Ont.; Mr. and Mrs. R. R. Baker, Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.; W. E. D. Baker, Stein-Hall & Co., New York; M. D. Bardeen, Lee Paper Co., Vicksburg, Mich.; Lyman Beeman, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; O. F. Behrend, Hammermill Paper Co., Erie, Pa.; R. G. Betts, W. L. E. Gurley Co., Troy, N. Y.; G. W. Bicking, U. S. Bureau of Standards, Washington, D. C.; H. O. Bing, Beloit Iron Works, Beloit, Wis.; Chas. F. Black, Penberthy Injector Co., Detroit, Mich.; L. N. Booth, Booth Chemical Co., Elizabeth, N. J.; Mr. and Mrs. John A. Bowers, Hammermill Paper Co., Erie, Pa.; Arthur M. Brooks, Raffold Company of America, Andover, Mass.; Mr. and Mrs. W. F. Bromley, Hammermill Paper Co., Erie, Pa.; Mr. and Mrs. W. T. Brust, Hammermill Paper Co., Erie, Pa.; E. F. Bartells, Munising Paper Co., Munising, Mich.; F. K. Becker, Bird Machine Co., South Walpole, Mass.; Chas. W. Boyce, American Paper & Pulp Association, New York; C. F. Buss, Provincial Paper Co., Thorold, Ont.; J. Buss, Provincial Paper Co., Toronto, Ont.; Frank Busch, Hammermill Paper Co., Erie, Pa.; Mr. Bothwell, Hammermill Paper Co., Erie, Pa.; H. E. Brehme, Hammermill Paper Co., Erie, Pa.; L. Beighey, Hammermill Paper Co., Erie, Pa.; Jackson Burgess, Burgess-Parr Co., Chicago, Ill.; Miss Aimee Birkinbine, Philadelphia.

Vack Bros., New York.

DONALD E. CABLE

Asst. to Manager, Fiber Products Div., U. S. Rubber Co., Cleveland, Ohio. Chairman of TAPPI Pulp Testing Committee.

JOHN F. RHOADES

Chief Engineer, The Mead Corp., Chillicothe, Ohio. General Chairman of TAPPI Engineering Division.

Donald Cable, U. S. Rubber Co., Cleveland, Ohio; E. P. Cameron, Forest Products Laboratory of Canada, Montreal, Que.; W. Boyd Campbell, Forest Products Laboratory of Canada, Montreal, Que.; Frank Challis, Stecher Lithographic Co., Rochester, N. Y.; Roy C. Charron, U. S. Envelope Co., Worcester, Mass.; H. A. Chase, The Brown Company, Berlin, N. H.; Mr. and Mrs. C. R. Christman, National Aluminate Corp., Chicago, Ill.; C. L. Clark, Nash Engineering Corp., Chicago, Ill.; Norman Clark, Standard Paper Co., Richmond, Va.; Max Cline, International Paper Co., Glens Falls, N. Y.; A. E. Cofrin, Fort Howard Paper Co., Green Bay, Wis.; C. M. Conners, Electro Bleaching Gas, New York; S. Y. Cottrell, National Aniline & Chemical Co., Chicago, Ill.; John Cornell, The Paper Mill, New York; O. N. Cornell, Kalbfleisch Corp., Erie, Pa.; C. E. Curran, U. S. Forest Products Lab., Madison, Wis.; Harvey P. Cannon, Container Corp. of America, Philadelphia; C. E. Carpenter, Container Corp. of America, Chicago; T. W. Chandler, DuPont Cellophane Co., Buffalo, N. Y.; P. W. Codwise, Certain-teed Products Corp., Buffalo, N. Y.; N. C. Cooper, Roessler & Hasslacher Chem. Co., Niagara Falls, N. Y.; Cyril Colby, Hammermill Paper Co., Erie, Pa.

Mr. and Mrs. D. S. Davis, The Mead Corp., Chillicothe, Ohio; Mr. and Mrs. H. B. Dawson, Hammermill Paper Co., Erie, Pa.; E. F. Dhus, Hammermill Paper Co., Erie, Pa.; H. B. Doughty, U. S. Forest Products Lab., Madison, Wis.; Robert E. Dick, Individual Drinking Cup, Easton, Pa.; J. H. Dow, Eastwood Wire Corp., Belleville, N. J.; Arthur C. Dreshfield, Paper Makers Chem. Corp., Kalamazoo, Mich.; G. F. Durand, Port Huron Sulphite Co., Port Huron, Mich.; L. F. L. Durchman, International Paper Co., Glens Falls, N. Y.; F. E. Divine, Hammermill Paper Co., Erie, Pa.; B. F. Dolan, Alliance Paper Co., Merritton, Ont.

W. L. Egy, W. L. E. Gurley Co., Troy, N. Y.; Robt. L. Eminger, American Pulp & Paper Mill Superintendent's Association, Miamisburg, Ohio; W. V. Evans, The Gilchrist Co., Evanston, Ill.

J. W. Fenger, Mathieson Alkali Works, New York; E. Flinter-

mann, Michigan Steel Casting Co., Detroit, Mich.; James Foxgrover, Paper Makers Chem. Corp., Kalamazoo, Mich.; A. H. French, Johns-Manville Corp., Summerville, N. J.; F. C. Farnsworth, The Farnsworth Co., Conshohocken, Pa.

K. P. Geohegan, The Aetna Paper Co., Dayton, Ohio; J. C. Gibbons, Crucible Steel Corp., New York; Walter L. Glass, Tolhurst Machine Works, Troy, N. Y.; W. N. Greer, Leeds & Northrup Co., Philadelphia, Pa.; Roger C. Griffin, Arthur L. Little, Inc., Cambridge, Mass.; O. P. Gephart, Oxford Miami Paper Co., West Carrollton, Ohio; A. T. Gardner, Combined Locks Paper Co., Combined Locks, Wis.; A. S. Goodrich, Hammermill Paper Co., Erie, Pa.

J. W. Hagar, Crane & Co., Dalton, Mass.; J. S. Hart, Forest Products Lab. of Canada, Montreal, Que.; Mr. and Mrs. R. S. Hatch, Pulp Bleaching Corp., New York; R. S. von Hazmburg, Scott Paper Co., Chester, Penna.; J. J. Healy, Jr., Merrimac Chemical Co., Boston, Mass.; Hans Heller, Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa.; C. C. Heritage, Oxford Paper Company, Rumford, Maine; Parke Herrick, Hammermill Paper Company, Erie, Pa.; Gilbert K. Hill, Menasha, Wis.; E. S. Hinman, P. H. Glatfelter Company, Spring Grove, Pa.; H. S. Hoffmann, General Dyestuff Corp., Philadelphia, Pa.; Mr. and Mrs. H. H. Holmes, Hammermill Paper Co., Erie, Pa.; A. H. Hooker, Hooker Electrochemical Co., Niagara Falls, N. Y.; R. W. Hooker, Hooker Electrochemical Co., New York; E. B. Hurst, Munising Paper Co., Munising, Mich.; R. W. Howell, R. T. Vanderbilt Co., New York; Miss Lois V. Hans, Container Corporation of America, Chicago.

Thos. Ireland, Crane Co., New York.

Andrew Jackson, American Writing Paper Co., Holyoke, Mass.; George Jayme, Canadian International Paper Co., Hawkesbury, Ont.; Bjarne Johnsen, Hammermill Paper Co., Erie, Pa.; F. H. Johnson, Jr., Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; H. W. Johnston, Forest Products Lab. of Canada, Montreal, Que.; W. O. Johnson, Strathmore Paper Co., Woronoco, Mass.; E. J. Johnstone, Paper Makers Chemical Corp., Lockport, N. Y.

Ralph Kumler, Bennett, Inc., Cambridge, Mass.; Thos. J. Keenan, The Paper Industry, New York; Horace Keesey, Schmidt & Ault Paper Co., York, Pa.; William S. Kidd, F. B. Eddy Co., Hull, Que.; Miss Helen U. Kiely, American Writing Paper Co., Inc., Holyoke, Mass.; A. E. Kimberly, Bureau of Standards, Washington, D. C.; F. O. Kreisler, Lurgi Gesellschaft, Frankfurt, Germany; Arthur F. Klein, Hammermill Paper Co., Erie, Pa.; Mr. and Mrs. F. P. Klund, Hammermill Paper Co., Erie, Pa.; Mr. and Mrs. M. A. Krimmel, Hammermill Paper Co., Erie, Pa.; H. E. Karberg, Alliance Paper Co., Merritton, Ont.; C. E. Kinney, Hercules Powder Co., Wilmington, Del.; R. D. Kehoe, Fidalgo Drying Systems, Inc., New York.

C. E. Lyon, Hooker Electrochemical Co., Niagara Falls, N. Y.; R. W. Leeper, Canadian General Electric, Toronto, Ont.; Frank D. Libby, Kalamazoo Vegetable Parchment Co., Kalamazoo Mich.; A. Lowenstein, Appleton Coated Paper Co., Appleton, Wis.; Mr. and Mrs. A. J. Luth, Nekoosa-Edwards Co., Port Edwards, Wis.; James A. Lee, Chem. & Met. Engineering, New York; K. Lloyd, Hammermill Paper Co., Erie, Pa.; H. N. Lee, Hammermill Paper Co., Erie, Pa.

R. G. Macdonald, Secretary—TAPPI, New York; William W. Macklem, Black-Clawson Co., Hamilton, Ohio; Miss Louise McGrath, Booth Chemical Co., Elizabeth, N. J.; C. G. Malcolm, Mellon Institute, Pittsburgh, Pa.; R. B. Martin, Wallace & Tiernan Co., Newark, N. J; J. G. Mason, Jr., Edgar Brothers Co., New York; Miss Jessie Minor, Rag Content Paper Mfrs., Springfield, Mass.; Sidney Meyers, Merritt Engineering & Sales Co., Lockport, N. Y.; Mr. and Mrs. J. D. Miller, York Haven Paper Co., York Haven, Pa.; H. C. Morris, Hercules Powder Co., Wilmington, Del.; H. A. Morrison, Oliver United Filters, Inc., New York; Chas. E. Mueller, Paper Makers Chem. Corp., Kalamazoo, Mich.; Harold R. Murdock, Champion Fibre Co., Asheville, N. C.; W. H. Monsson, Munising Paper Co., Munising, Mich.; O. P. Maxwell, West Virginia Pulp & Paper Co., Luke, Md.; M. M. Meachem, Certain-teed Products Corp., Buffalo, N. Y.; O. J. Mills, Sandy Hill Iron & Brass Wks., Hudson Falls, N. Y.; Robert MacMahon, Hammermill Paper Co., Erie, Pa.; L. MacMahon, Hammermill Paper Co., Erie, Pa.

Mr. and Mrs. Earl Neubig, Hammermill Paper Co., Erie, Pa.; C. W. Nilson, E. D. Jones & Sons Co., Pittsfield, Mass.; W. A. Nivling, Huron Milling Co., Boston, Mass.; W. L. Nixon, Moore & White Co., Philadelphia, Pa.; H. G. Noyes, Appleton Vocational School, Appleton, Wis.; Kurt Neuenfeldt, Hammermill Paper Co., Erie, Pa.

Mr. and Mrs. Henry F. Obermanns, Hammermill Paper Co., Erie, Pa.; Mr. and Mrs. J. J. O'Connor, Mead Corporation, Chillicothe, Ohio.

Mr. and Mrs. J. L. Parsons, Hammermill Paper Co., Erie, Pa.; Robert Pattison, American Writing Paper Co., Holyoke, Mass.; C. E. Peterson, Riegel Paper Corp., Riegelsville, Pa.; W. E. Phillips, Mathieson Alkali Works, Chicago, Ill.; Mr. and Mrs. Bennett Preble, Marathon Paper Mills Co., Rothschild, Wis.; Harold Peckham, Hammermill Paper Co., Erie, Pa.; T. J. Paasch, Hammermill Paper Co., Erie, Pa.; R. P. Price, Hammermill Paper Co., Erie, Pa.; Chas. Perry, Esleek Mfg. Co., Turners Falls, Mass.

G. F. Reade, New York; Edward O. Reed, Crane & Co., Dalton, Mass.; Mr. and Mrs. Chas. H. Reese, Hammermill Paper Co., Erie, Pa.; John H. Rhoades, Mead Corporation, Chillicothe, Ohio; Ralph E. Rhoades, Scott Paper Co., Chester, Pa.; Karl F. Richter, Stebbins Engineering & Mfg. Co., Watertown, N. Y.; B. H. Ritter, Hooker Electrochemical Co., New York; Chas. W. Rivise, Patent Attorney, Philadelphia, Pa.; J. M. Rowland, Niagara Falls, Ont.; H. J. Rowley, Director of Research, Abitibi Power & Paper Co., Iroquois Falls, Ont.; J. D. Rue, Newsprint Service Bureau, New York; C. E. Robinson, Reliance Elec. & Eng. Co., Cleveland, Ohio; L. E. Randecker, Hammermill Paper Co., Erie, Pa.; Wm. Reichert, Hammermill Paper Co., Erie, Pa.; Joseph Razek, University of Pennsylvania, Philadelphia; Mrs. Grace M. Rockwell, Kalamazoo, Mich.

Harold Sinclair, Bennett, Inc., Canton, Ohio; B. F. Savery, Nash Engineering Corp., Chicago, Ill.; J. Karl Schmidt, E. I. DuPont de Nemours, Philadelphia; H. Z. Schniewind, Foreign Paper Mills, New York; J. S. Sconce, Hooker Electrochemical Co., New York; B. W. Scribner, Bureau of Standards, Washington, D. C.; Hellmuth Schwalbe, Dill & Collins, Philadelphia; Clarence Seborg, Forest Products Lab., Madison, Wis.; M. S. Shenk, National Adhesive Corp., New York; O. H. Shuey, West Virginia Pulp and Paper Co., Cumberland, Md.; A. Simmonds, U. S. Forest Products Lab., Madison, Wis.; T. E. Sisson, Racquette River Paper Co., Potsdam, N. Y.; H. J. Skinner, Skinner & Sherman, Inc., Boston, Mass.; A. G. Spain, New York Central R. R., Cleveland, Ohio; Geo. K. Spence, Castanea Paper Co., Johnsonburg, Pa.; Mr. and Mrs. A. O. Spierling, Hammermill Paper Co., Erie, Pa.; G. L. Smith, Flintkote Company, Lundhurst, N. J.; Mr. and Mrs. R. R. Stoltz, Westinghouse Elec. Mfg. Co., Wilkinsburg, Pa.,; R. H. Stevens, Bogalusa Paper Co., Bogalusa, La.; L. T. Summers, Port Huron Sulphite Paper Co., Port Huron, Mich.; M. S. Summers, Detroit, Mich.; B. F. Summers, Michigan Steel Casting Co., Detroit, Mich.; Frank L. Swabb, Heisler Locomotive, Erie, Pa.; W. H. Swanson, Kimberly-Clark Co., Neenah, Wis., Clifford R. Swett, Escanaba Paper Co., Escanaba, Mich.; Robert Sternberg, Hammermill Paper Co., Erie, Pa.; J. J. Sullivan, Hammermill Paper Co., Erie, Pa.; Thos. Schwabb, Hammermill Paper Co., Erie, Pa.; H. Sutton, Hammermill Paper Co., Erie, Pa.; W. Stenstrom, Hammermill Paper Co., Erie, Pa.; J. H. Slater, Escanaba Paper Co., Escanaba, Mich.; G. H. Spencer, Minton Vacuum Dryer Corp., Greenwich, Conn.

Mr. and Mrs. Chas. R. Tait, Hammermill Paper Co., Erie, Pa.; Wilford B. Torrey, S. D. Warren Co., Cumberland Mills, Me.;

John Traquair, The Mead Corp., Chillicothe, Ohio; R. M. True, Crocker-McElwain Co., Holyoke, Mass.; L. A. Thompson, Paper Makers Chemical Corp., Holyoke, Mass.; F. H. Thurber, Bureau of Standards, Washington, D. C.; E. F. Tucker, Stebbins, Eng. & Mfg. Co., Ltd., of Canada, Montreal, P. Q.; F. M. Truesdale, Hammermill Paper Co., Erie, Pa.; Carl Trost, Hammermill Paper Co., Erie, Pa.

Benjamin Wahl, Detroit Sulphite Pulp & Paper, Detroit, Mich.; Eric Wahlforss, Hammermill Paper Co., Erie, Pa.; H. C. Webber, Munising Paper Co., Munising, Mich.; P. F. Wehmer, Electrical Testing Laboratories, New York; W. J. Weed, Electro Bleaching Gas Co., New York; B. L. Wehmhoff, Gov. Printing Office, Washington, D. C.; S. C. Wentz, P. H. Glatfelter Co., Spring Grove, Pa.; Mr. and Mrs. E. F. Whittington, Sutherland Paper Co., Kalamazoo, Mich.; Robt. Whittington, Sutherland Paper Co., Kalamazoo, Mich.; Agart Wiberg, Gilbert Paper Co., Menasha, Wis.; Mr. and Mrs. Frederick Wierk, Johnson & Wierk, Inc., New York; Mr. and Mrs. Norman W. Wilson, Hammermill Paper Co., Erie, Pa.; Wm. R. Willets, Western Electric Co., Plainfield, N. J.; D. B. Williams, Williams Apparatus Co., Watertown, N. Y.; F. M. Williams, Williams Apparatus Co., Watertown, N. Y.; John O. Woodsome, Penberthy Injector Co., Detroit, Mich.; Henry Waite, Hammermill Paper Co., Erie, Pa.

F. H. Yorston, Forest Products Lab. of Can., Montreal.

Zellerbach and Crown Willamette Earnings

PORTLAND, Ore., September 6, 1930.—In a joint release of earnings statements of Crown Zellerbach corporation and Crown Willamette Paper company the Crown Zellerbach corporation and its subsidiaries report gross profits aggregating $2,856,876 before depreciation, depletion, bond and debenture interest and income taxes for the three months ended July 31, 1930. For the quarter ended April 30, 1930, gross profits totaled $2,675,941.

Net income available to Crown Zellerbach corporation amounted to $758,844 for the period, equivalent, after preferred and preference dividends, to 18.5 cents per share on the 1,991,680 common shares outstanding at the end of the quarter. For the preceding three months net income totaled $750,660, equivalent, after preferred and preference dividends to 18.1 cents per share on the same number of outstanding shares.

Crown Williamette Paper company and its subsidiaries, including Pacific Mills, Ltd., reports gross profits of $1,840,646 before depreciation, depletion, bond interest and income taxes for the quarter ended July 31, 1930. Net income after all charges including minority stockholders' interest amounted to $639,352. For the three months ended April 30, 1930, gross profits aggregated $1,710,550 and net income after all charges totaled $522,197.

President I. Zellerbach of Crown Zellerbach corporation commented on the result as follows: "Though the gross earnings for the first quarter of the current fiscal year were $180,934 higher than the preceding quarter, they continue to reflect the existing adverse general business conditions. Indications, however, point to a substantial increase in sales in the second quarter, which it is anticipated will result in larger earnings.

"The directors at the monthly meeting held on August 28 declared the regular quarterly dividend of 25c per share, payable October 15 to holders of record September 30."

Wall Paper Plant to Reopen

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., September 6, 1930.—Employes of the Imperial Wall Paper Company were notified that their vacation period had been prolonged and consequently the big plant will not reopen until September 15. The mill has been shut down for the past two weeks for the annual vacation period and the decision to extend it was influenced by the improvements being made to plant equipment. The company expects to run at full capacity.

International Nickel Co. Joins TAPPI

The International Nickel Company of Canada, Limited, is the present name of a company which began in 1886 as the Canadian Copper Company organized to mine and smelt the ores of the Sudbury district of Ontario, Canada. The refining of the matte produced at the smelter was carried on by the Orford Copper Company at Constable Hook, New Jersey. The Orford and Canadian Companies consolidated in 1902 to form the International Nickel Company.

In 1904 the well-known alloy Monel Metal was produced at the Orford works directly from matte from Copper Cliff. From 1904 to 1922 Monel Metal was supplied as ingots to custom steel rolling mills who converted it into finished forms. The demand for the alloy became so great that in 1922 a rolling mill was erected at Huntington, West Virginia, devoted to the production of Monel Metal and Rolled Nickel. Since then the consumption of Monel Metal has increased from 3,000 tons in 1922 to 10,000 tons in 1929 and is still increasing.

The unusual demand for nickel during the war lead to the erection of a refinery at Port Colborne Ontario which was completed in 1918. After the war the plant at Constable Hook, New Jersey, was dismantled and at the present time all nickel refining on this continent is conducted at Port Colborne and all Monel Metal refining at Huntington, West Virginia.

Following the war and the subsequent loss of what had been hitherto the major outlet for nickel, viz, armament, the company was confronted with the problem of developing a market for its product in keeping with its production facilities which had been expanded and improved to take care of the war time demands.

It had been learned by experience that the most important phase in new market development covers the technical and scientific details. In other words sales must follow the establishment of the absolute technical suitability of a material for its intended or proposed use.

Mr. R. C. Stanley, who was then, and is now, president of the company placed the task in the hands of Mr. A. J. Wadhams in charge of Development and Research, who gathered about him such able and vigorous men as Dr. P. D. Merica and his staff. These men developed and made known the valuable properties of nickel in a manner which has resulted in enabling engineers to apply nickel and nickel alloys to the needs of industry to an extent which has required further development of mining and refining facilities to keep up with the demand.

In December 1928 the International Nickel Company through an exchange of stock acquired the Mond Nickel Company, Limited and thereby brought about a consolidation tending to eliminate heavy capital expenditures for duplicate mining and smelting facilities.

At the present time a new smelter of very large capacity is being built at Copper Cliff and further expansion in refining facilities at both Port Colborne and Clydach Wales are being carried out.

The company produces and sells nickel in the form of Inco electro squares, pig, shot and Mond Pellet for alloying purposes and rolled nickel in all the standard mill forms including cold drawn seamless tubing. It also produces and sells Monel Metal in the standard mill forms such as ingots, billets, rod and bar stock, sheet, etc. as well as in the form of shot used in the manufacture of Monel Metal castings.

The use of nickel and nickel alloys in the pulp and paper industry is bound to increase; co-operation between the metal producers and the technical experts of the industry will assure that the increase in the use of the metal will be accompanied by improvements in the functioning of equipment and in the quality of the product manufactured which will redound to the benefit of all concerned.

Wisconsin Paper Mills Show Larger Earnings

Consolidated Water Power & Paper Co. Declares Extra Dividend, Third Made This Year—Company Is Now Paying Dividends On Basis of 9 Per Cent Annually—Operating Conditions Very Satisfactory and Market For Products Excellent

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 8, 1930.—Several of the larger mills in Wisconsin have shown larger earnings this year than last, despite the general business depression. Among these is the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., which came out with an announcement last week that stockholders would be given an extra dividend.

This extra dividend will be one dollar per share, and is the third extra division to be made this year. The company previously had been paying quarterly dividends on the basis of six per cent annually. This year the basis is nine per cent annually.

Operating conditions have been found very satisfactory, and the company is enjoying a good market for its line of book papers, recently substituted for part of its news print output.

Dells Pulp Mill Remodeled

Remodeling of the old pulp mill of the Dells Paper and Pulp Company, Eau Claire, Wis., into a generator plant, has been completed by the Northern States Power Company. The grinders were removed to a new and larger building, and power generators were attached to the water wheels. These changes were possible after the Eau Claire Dells Improvement Company, power subsidiary of the paper company, sold its rights to the Northern States Company and made a contract with the latter for its future power supply. Additional generators also have been installed in this newly created power house.

Clearing out of the flume leading to the water wheels has also been accomplished and the power company is now engaged in constructing a large stilling basin below the dam to prevent the backwash from the water passing over the dam from undermining the apron of the dam. Several weeks more will be required to finish the improvements.

More Freight Rate Complaints

New threats of increased freight rates for Wisconsin paper mills in addition to the several cases already decided or in progress have been brought into the battleground of the Interstate Commerce Commission. The Northwest Paper Company, Cloquet, Minn., has filed complaint alleging that freight rates on sulphur from Hoskins, Texas, to Cloquet, are unduly prejudicial to Cloquet and unduly preferential to Wisconsin mills. It charges that the rate of 52 cents per 100 pounds which it pays is unreasonable, unduly prejudicial and discriminatory, and asks a rate of 47½ cents. It is contended that in March, 1927 the Wisconsin rates were lowered, bringing about the present relationship.

A brief has been filed by the Wisconsin Paper and Pulp Manufacturers Traffic Association protesting against the attack made by the Northwest Company. The association intervened because it says the complainant has utterly failed to sustain its charges and because it is opposed to an order that might result in an increase in all-rail sulphur rates to Wisconsin; further, that the company is not losing business to Wisconsin but, on the contrary, is increasing its production and enlarging its plant. Its trouble is caused, the association says, by over-production and by attempt to sell this surplus in states too far away.

Railroads have filed an answer to the complaint charging that it is based entirely on comparison with rates to Appleton, Green Bay and other Fox River Valley points in Wisconsin rather than on any inherent wrong in rates and asks that the case be dismissed. The defending carriers also say that the Northwest Company filed no protest in 1927 when the Wisconsin rates were lowered and if the level of sulphur rates had been of vital importance, would not have "sat quietly by" while the reducing was being accomplished.

In another petition filed with the Interstate Commerce Commission, the Central Freight Association and Southwestern defendants ask the raising of rates on paper from the Fox River Valley in Wisconsin rather than a lowering of rates from the Miami Valley of Ohio. Carriers desire reopening of the case where on July 12, 1930, the I. C. C. found rates on certain paper and paper articles from the Miami Valley to destinations in Iowa, Missouri, Nebraska, Kansas, Colorado and Oklahoma were unreasonable, unduly prejudicial and awarded reparation to the Advance Bag and Paper Company. The lower rates prescribed by the Commission were based on rates from the Fox River Valley to similar destinations and were to go into effect on October 15. Now the defending railroads contend that the Fox River Valley rates are below reasonable maximum, are "depressed rates and not a proper standard for gauging rates from C. F. A. territory." The railroads also asked the reopening of the Minnesota and Ontario paper case and the Fox Paper case, on which Fox River Valley rates have been based, in their determination to raise the Fox River rates.

Forest Fire Prevention

J. B. Nash, woods manager of the Nekoosa-Edwards Paper Company, Nekoosa, Wis., has been named on a committee of six men to promote the co-ordination of federal, state, county and private fire prevention and control activities so as to prevent in some way the many forest fires which are consuming Wisconsin timber and pulp wood.

Because of the extent of fires this year, representatives of lumber and paper companies and various governmental bodies met at Ashland, Wis., recently to devise means of coping with the situation. Six upper Wisconsin counties most affected will ask the next legislature for at least $1,000,000 for forest fire fighting. At present only $239,000 is raised by taxes for forestry purposes, and the Wisconsin Conservation Commission has 14,000,000 acres of timber lands to look after. Control of logging slashings, use of airplanes for detection, and highway patrol crews for fighting, are among the suggestions made. A demand also will be made for roads giving access to all timber regions.

Raymond Paper Bag Co. Building New Plant

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, September 8, 1930.—It is understood that the F. K. Vaughn Construction Company of Hamilton, is making satisfactory progress for the erection of a new plant for the Raymond Paper Bag Company, Middletown, for the manufacture of paper bags and containers.

The Hamilton firm is widely known as an engineer and contractor, having been identified with several large paper mill contracts in this section.

The Raymond Paper Bag Company plans the construction of a multi-story type, brick and steel factory, providing for a large capacity, and costing in the neighborhood of $200,000, probably more, including machinery and equipment. It is one of the substantial industries of the valley and has conducted branches, one of which was located at Miamisburg.

HELP WANTED

The paper industry constantly needs new machines and appliances that will make paper better, make it cheaper, or make it faster. Those of us on the engineering end of the job need help from men in the mill, like yourself, in designing these machines.

Have you an idea, born of mill experience, for a new piece of machinery or a new device which will bring a saving in mill operation or improve the product? If you have, we want it.

This is our standing offer: If we find the idea workable, we will develop it and manufacture it for widespread use, paying you well for the help you give us.

The business of the Bird Machine Company has grown steadily and profitably because of our fixed policy of building good ideas into machines which the entire industry has been eager to use. Sometimes these good ideas have come from inside our own organization; sometimes from outside. In every case, the industry has profited—and the originator of the idea has profited.

Add your idea to these:

Bird Screen—Bird Centrifiner
Vickery Felt Conditioner—Vickery Doctor
Bird Shower Pipe—Bird Thickener
Bird Save-All—Bird Pulp Screen

Come to us with your idea. Together, we can give it effective development and get the most out of it through lively promotion.

You may write to us in confidence, if you wish, and you may be sure that your rights will be thoroughly respected.

BIRD MACHINE COMPANY, SOUTH WALPOLE, MASS.

Impending Changes In News Print Industry

Merger of Powerful Interests Would Probably Lead to Newsprint Institute Members Securing Larger Share of Business—Independent Mills Have Been Running At Full Capacity—New Machines Coming Into Operation May Cause Upheaval

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 8, 1930.—While there is no further definite news in regard to the reported possibility of the formation of a holding company to bring into a merger the Canada Power and Paper Company, the Abitibi Power and Paper Company, and the Backus-Brooks interests, there is a good deal of discussion regarding impending changes in the news print industry of which such a move is looked upon as the logical forerunner. Should the merger be carried through, the next move, it is believed, would be directed towards securing a larger share of the business for those members of the Newsprint Institute of Canada who have been restricting production and booking tonnage among themselves. The fact that while the members have been running their mills on a basis of around 70 per cent of capacity or less, other mills who have remained independent have, by various concessions to publishers, secured enough business to run at 100 per cent capacity, is held to constitute an anomaly which is against the interest of those who have been trying to stabilize the industry. A further disquieting feature is that the installation of new machines has proceeded meanwhile, and is still proceeding. Then again, the newsprint mills in Newfoundland, which enter into direct competition with Canadian mills, have also secured enough business to keep them running at 100 per cent capacity. Members of the Newsprint Institute are reported to be tired of "holding the bag" for outside corporations and making new ventures profitable while they themselves are not getting an adequate return on their investments.

While there is no improvement in the demand for newsprint, new machines in prospect are two of the new Maclaren mill at Buckingham, now ready to operate, adding 250 tons per day to the total capacity; two others being installed by the New Brunswick International Paper, capacity 250 tons per day; another under consideration by the Mersey Paper, of 125 tons capacity; and expansions by British Columbia mills. Tonnage for these machines, it is held, can only come by cutting into business of members of the Newsprint Institute. Hence there is talk of the members acting independently to secure business, and putting up a competition with the independents now securing business to run at 100 per cent capacity. The organization and financial resources of such an amalgamation as is now reported to be in prospect would permit them to exercise a dominating position in the market which would bring matters to a head, and radically change the existing state of affairs.

For a time, therefore, the prospects are for an upheaval in the trade such as efforts have, for a long time, been made to avoid.

New Executive for Canada Power & Paper

At a meeting of the directors of Canada Power and Paper Corporation three vice-presidents were appointed. Geo. M. McKee, who was already vice-president of the Corporation, remains as senior vice-president. C. R. Whitehead becomes executive vice-president. Frank W. Clarke and Robert A. McInnis also become vice-presidents, the latter in charge of operation.

George M. McKee is vice-president and managing director of the Canada Power and Paper Corporation; president of the Port Alfred Pulp and Paper Corporation; president of the St. Maurice Valley Corporation; president of the Anticosti Corporation; president of the Belgo Paper Company, Ltd., and a director of Building Products, Ltd., the Howard Smith Paper Mills Ltd., the Laurentide Company Ltd., and the Laurentide Ottawa Company, Ltd.

C. R. Whitehead, former president of Wayagamack Pulp and Paper Company, Ltd., who in February, 1930, was appointed general manager of the Canada Power and Paper Corporation, joined the board of the latter company in September, 1929, as a result of the merger. He was one of the first Canadian industrial operators to recognize the possibilities of Three Rivers as a manufacturing centre, and has played a great part in the development of that section of the Province of Quebec. Mr. Whitehead is president of the Waybasso Cotton Company, Ltd., Three Rivers, and president of the Shawinigan Cotton Company, Ltd., Shawinigan Falls.

Frank W. Clarke is president of the Gulf Pulp and Paper Company of Clarke City, Que., president of the Quebec Logging Corporation, and a director of the Clarke Trading Company, Clarke Steamship Company, Labrador Fisheries, Ltd., Anglo-Newfoundland Development Company, South Shipping Company, and other corporations. With Lord Rothermere he, in 1926, formed the Anglo-Canadian Pulp and Paper Mills, Ltd., of which corporation he was vice-president. In 1925 he was elected president of the Canadian Pulp and Paper Association.

R. A. McInnes was managing director of the Anglo-Canadian Pulp and Paper Mills, Ltd., prior to the merger with Canada Power and Paper, and is a director of the Quebec Logging Corporation. He joined the Abitibi Power and Paper Company, Ltd. as assistant to the president at the Montreal office in 1914 and when the necessity for a mill manager arose in 1917 he was given that position, retaining the post until 1926. In 1927 he became general manager of the Anglo-Canadian Pulp and Paper Mills, and in 1929 was elected a member of the executive committee of the Canadian Pulp and Paper Association.

Dalhousie Mill Expansion

Good progress is being made in the installation of two new machines at the Dalhousie mill of the New Brunswick International Paper Company. It is expected these will be ready to produce newsprint early in October. This will increase the capacity of this mill from about 225 to 450 tons daily and raise capacity of the three mills in Canada—Gatineau, Three Rivers and Dalhousie—to 1,750 tons daily, or over 500,000 tons per annum. This addition of two machines will, of course, add to the combined capacity of Canadian newsprint mills, but it is understood that tonnage will be cut down in the United States mills of International to take care of the difference.

New Paper Making Machine Patented

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., September 6, 1930.—A patent has been granted to F. A. Helin, of this city, for his invention of a new paper making machine, according to word received this week from the United States Patent Department. He applied for the grant in March 1929 and has assigned his rights to the Bagley and Sewall Company. The invention is made up of many new features. Mr. Helin is employed as a draftsman by the Bagley and Sewall Company and has patents pending for a number of other inventions which he recently perfected.

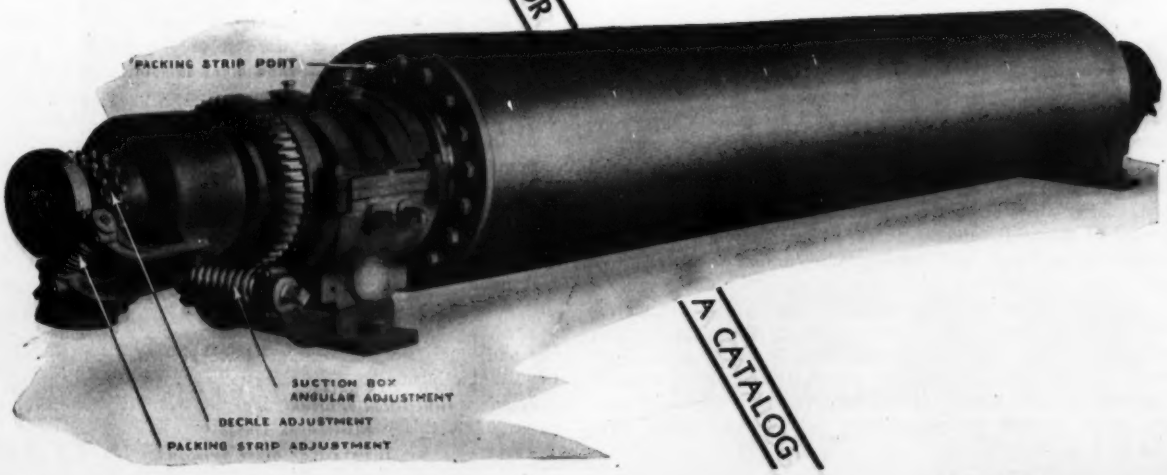
A patent has also been granted to Alfred C. Coty and Thomas E. Coty, of the Coty Machine Company, for the invention of a machine for placing bottoms on paper bags. They made application for the patent in May 1928.

WRITE YOUR NAME AND ADDRESS ON THE MARGIN OF THIS PAGE AND MAIL IT TO US FOR A CATALOG

As an experiment, one mill ran a Downingtown Suction Press Roll for a considerable time with a loading of 300 pounds per inch of face of top roll in a reversed press. ✓ The newsprint was delivered to the dryers 40% bone dry and then dried on twenty-eight 48" dryers at a speed of 630 F. P. M. with a steam consumption of 3500 pounds per ton of paper. ✓ As far as we know, this is the highest nip pressure that has ever been carried by a suction press roll. ✓ New catalog sent on request.

Downingtown Manufacturing Co.
Downingtown, Pa., U. S. A.

DOWNINGTON KILBERRY PATENT SUCTION ROLL



Paper Trade Outlook Favorable in Chicago

Fine Paper Market Exhibits Continual Improvement and Distributors Anticipate Stable Conditions During Closing Months of Year—News Print Industry Hopes For Higher Prices In 1931—Kraft Paper Only Moderately Active

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., September 8, 1930.—Chicago paper dealers began September with little improvement in actual business but with various indicators pointing to a more favorable situation in the very near future. Fine paper dealers feel more assured of a stable market, according to reports, and are going into the fall season with this fact as a cheering one. There are indications here that fine paper merchants are showing a constant improvement in their general market and any increased demand is going to reflect favorably almost immediately. No word has been given out of contract prices in news print for 1931 as yet. However, from several sources has come an indication that the trend in news print prices may be upward. This is, of course, the hope of the industry and will at least probably prevent any downward revision next year. Kraft papers are still slow and show no noticeable signs of immediate improvement. Ground woods are only fair but the market is reported firm. Waste paper merchants here have their attention centered on a meeting to be held in Chicago, early next week, which may be an attempt to strongly organize the waste paper trade.

Waste Paper Dealers to Convene

While a number of waste paper dealers in Chicago and vicinity have received invitations to attend a conference of waste paper merchants at the Palmer House, Chicago, on September 10, none of them seem to know a great deal about the program nor about the real purpose of the meeting. The waste paper trade is known, however, to be exceedingly anxious to perfect a strong organization which will permit it to improve existing conditions in the industry and, it is expected among Chicago dealers, that this may be the outcome of the meeting. At any rate between 65 and 75 merchants are expected to attend. Plans for the meeting were made at a gathering in Columbus, Ohio, a few weeks ago and it is evident that the merchants who gathered there made no attempt to do anything other than call leading representatives of the industry to the Palmer House in Chicago, to really get an organization under way. Merchants interviewed on the subject seem to be interested in the outcome and feel that any sort of organization will have considerable effect in benefiting their industry. Journals in the waste paper industry are reported to be taking a part in the meeting with the laudable purpose of bettering the trade through organization.

Container Corp. Acquires Gibraltar Plant

The Container Corporation of America, leading producers of paper board containers, this week announced the acquisition of the assets and business of the Gibraltar Corrugated Paper Company, Inc., with plants at North Bergen, N. J. The purchase provides the Container Corporation for the first time with owned manufacturing facilities to serve the New York metropolitan area, the Gibraltar plant being located within one-half hour's trucking distance of the mid-Manhattan area. The transaction was closed through an exchange of Container Corporation preferred stock and a cash consideration, according to reports. The Container Corporation announcement also states that the present Sefton Division leased plant in Brooklyn will be merged with Gibraltar and that the paper board supply of the new division will be manufactured in the Philadelphia plant of the Container Corporation. Including the latest acquisition, Container is now operating nineteen plants located in mid-western and eastern cities. The Gibraltar Company began business in 1920 and the present factory, completed in 1927, is one of the most modern in the industry, covering an area of two and one-half acres of floor space, having a capacity of 25,000 tons a year. Samuel Katz, president and C. M. Thorson, vice president, who have been in charge of the Gibraltar Company, are to remain as active managers.

Association Activities in Chicago

Association activities in Chicago will be plentiful during the next two weeks. The Paperboard Industries Association announces that its next regular meeting and that of the Trade Practice Division will be held in Chicago, on September 23, 24 and 25. The Drake Hotel will again be the location for this important three day program, according to word from the headquarters at 608 South Dearborn street, Chicago.

The Chicago Paper Association will hold its next regular meeting at the Bismarck Hotel on Tuesday evening, September 9, and, according to D. F. Peck, president, the association members will again discuss the paper bag situation in a definite effort to clarify certain matters pertaining to this market that were brought before the group at the last meeting. The association is anxious, says Mr. Peck, to see paper bag manufacturers playing "the right kind of ball" with distributors here. Members of the association who are also members of the Middle States Wrapping Paper Association will also be laying plans for the meeting of that group during the National Paper Trade Association meeting here on the week of October 6.

The Salesmen's Association of the Paper Industry, Chicago Division, will meet today, September 8, at the Hamilton Club, to complete arrangements for the big final golf party at Wilmette, which will wind up the seasons golf program. Slated for September 18, the days outing is certain to draw a record crowd.

More Russian Pulpwood Arrives

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., September 6, 1930.—Officials of the Albany Port Commission announced this week that about 34,125 tons of Russian pulpwood inbound from Archangel has passed through the local terminal during the past week while 1,100 freight cars were required in hauling the shipments from the docks to the Corinth mills of the International Paper Company. Up to this time the average daily amount of the imported product handled here has amounted to about 1,000 tons and it is expected that this rate will be maintained for some time. It was said that about twenty per cent of the entire shipment destined for the Port of Albany had been received which means that the daily average will have to be increased to about 1,300 tons in order to land the remainder of the cargo by December.

Some new equipment was installed at the local terminal this week by the Williams Line, Inc., as a means of speeding up the unloading work, which is requiring a large force of stevedores. The Williams firm has contracted to move the entire shipment by a fleet of barges from New York city. Car loadings have run from fifty-five to sixty a day and plans call for this number to be increased. It was learned also that shippers in the West had been making inquiries regarding tonnage facilities and officials of the terminal have been devoting much time to this new business. Contracts now under way will place the port in a finished condition for the handling of full ocean cargoes late this year.

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Goodyear Technical Man—is bad news for the tough job. His attack is varied. Now it is movement of goods, now of power, now the disposal of waste. Everywhere he bears down on costs and builds up efficiency. He has a hawk's eye for waste, a faculty for improvement. Whether it is movement of materials, air, liquids, or engine-power, by the careful application of Goodyear Mechanical Rubber Goods in Hose, Belting, Molded Rubber Goods and Packing, he has unkinked many a hard knot. He gets the work out.

In paper manufacturing the G.T.M. has an outstanding record. He knows your problems. For the closed-coupled, idler-equipped beater drives he has supplied the revolutionary Goodyear Compass Endless (Cord) Belt — *the nearly stretchless belt with a core of rugged cord.* He has applied Goodyear Emerald Cord Multiple V Belts to multiple drives on calendars, beaters, grinders and pumps. He has specified soft-nozzled Goodyear Sanitary Hose, and for heavy duty drives, especially where small pulleys are in use, Thor Belts. He is an expert in your field. He can save money for you now.

For complete data on greater efficiency the G.T.M. can bring to your job, just write to Goodyear, Akron, Ohio, or Los Angeles, California.

THE GREATEST NAME IN RUBBER

GOODYEAR

BELTS MOLDED GOODS HOSE PACKING

Pennsylvania Paper Mills Broaden Operation

Plants Working On From 4 to 4½ Day Schedule Now Adopting Five Day Week—Request For Standard Grades Consists Mostly of Small Orders But Inquiries For Future Needs Are Fairly Numerous—Improved Demand For Specialties

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., September 8, 1930.—Though the expected slowly advancing paper markets have materialized there is every indication that business will be on a broader scale of upward revival within the near future. Orders have been widening in so far as small lot buying is concerned and distributors are feeling more encouraged in the inquiries that are now coming for greater quantities. There is some hesitancy on the part of the consumer to place large orders though stocks are low and there is no supply of consequence in the hands of the consumers who patronize the distributors.

Customarily the mill men are on the spot for the early September sales drive and trade visitors from the manufacturers usually show up about this time of the year to get an early start in advance Fall buying. This year there is a notable absence of trade associates from the manufacturers, and the dealers report little campaigning at this time from mill sources. It may be that the manufacturers are conserving their resources and would prefer to give absent vacationists an opportunity to get back to their desks from belated holiday travel before expending energies of salesmen in profitless drives in the territory, but the concensus of opinion is that the mills are waiting like Macawber for "something to turn up" and would prefer to await a surer footing in the trend of revived business and assurance that efforts and expenses will bring results before undertaking the 1930 autumn work and round of the distributors as in the past.

Though mills are normally on full time at this season, this year there has been disinclination on the part of some manufacturers to broaden operations, and those that have been on from four to four and a half day week are now slightly moving up schedule to the five day week. The mills are receiving many inquiries but have so many small orders that operations are not as profitable as they should be. A few specialty manufacturers report betterment but manufacturers producing grades of every day type of consumption are not so active.

Paper House Begins To Move

The Charles Beck Paper Company, one of the oldest fine paper distributors in the Quaker City, began to move its paper stock and sales and executive offices to the newer home recently completed in the mammoth Terminal Commerce Building, which will give the firm the most modern combination of sales, executive and warehousing facilities under a single roof. There will also be combined in the new location shipping facilities on two railroads and the advantages of a central city location within sight of City Hall. The Beck company expects to be completely settled in the new home by October 1. The firm has been established as a fine paper and paper box supply house for almost four score years and with its removal the long occupied location at 609 Chestnut street, will be abandoned.

Erection Of Franklin Memorial Begun

The first steps in clearing of the site which has been secured for the erection of the $6,000,000 Benjamin Franklin Memorial, which will house a broadly interesting paper exhibit of permanent interest as a feature of the Graphic Arts industries display which will be part of the Memorial, were taken last week when demolition of 57 buildings on the property was begun. The erection of the Memorial will begin in January and will take two and a half years to complete. The contract for the demolition of the buildings will require clearing of the site for the building of the Memorial structure within a period of 45 days. In the Memorial will be a historical exhibit of the progress of paper making in the United States from the early days of the first paper mill founded in this city by David Rittenhouse down to the present machine age and the visualizing of the actual process of paper making, kinds of paper, and other factors of the industry with a working model of a complete paper mill shown in permanent display. The Paper Committee of the Benjamin Franklin Memorial, Inc., which is working in conjunction with the custodians of the Memorial, the Franklin Institute, consists of the following members of the Philadelphia Paper Trade Association: Norbert A. Considine, Paper House of Pennsylvania; George W. Ward, D. L. Ward Company; and Grellett Collins, Dill and Collins Company. Mr. Considine has taken the matter up with the National association which will give its sponsorship to the project.

Champion Coated Puts Out New Bond

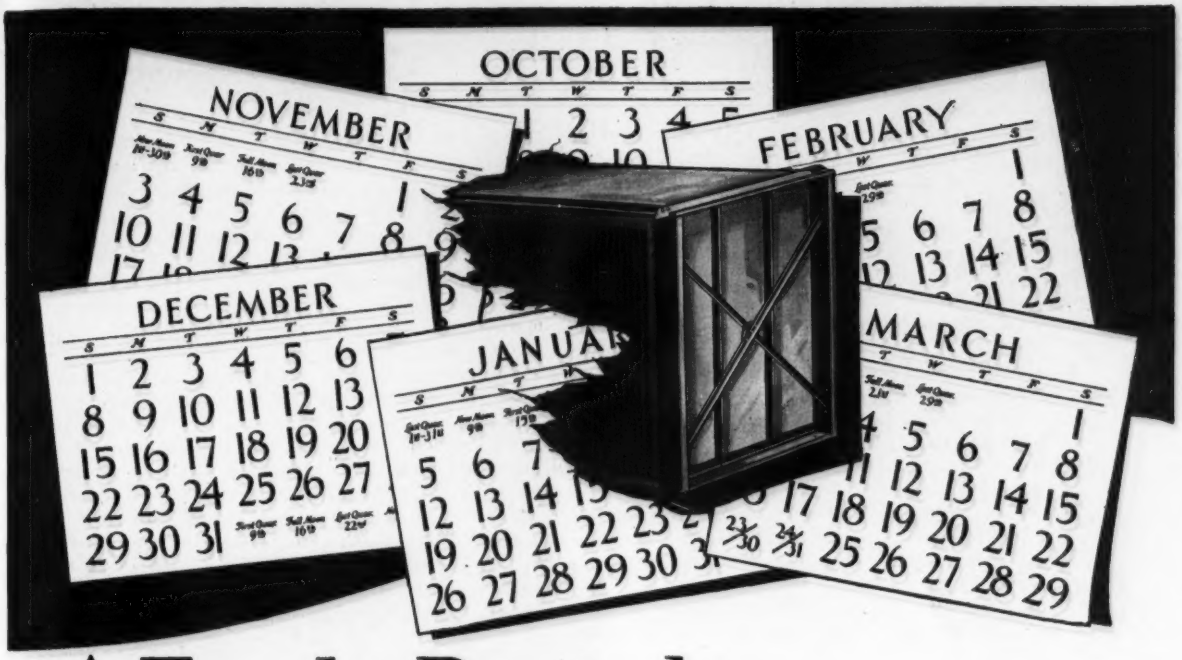
There is being introduced to the Philadelphia paper trade a new bond paper which is the latest addition to the stocks of the Champion Coated Paper Company, of Hamilton, Ohio. The new product which is being introduced by the local mill representative and manager of the Philadelphia headquarters, Charles A. Labor, Drexel Building, is a watermarked bond to be known as the Daily Mail, of medium price and in sheets with envelopes to match-made in all standard sizes and weights. It is produced in white and nine colors. The new bond will be stocked by the local paper distributors representing the Champion Coated Paper as part of the regular mill lines under the recent innovation of marketing regular mill brands by the manufacturers which became effective with the policy to discontinue the making of private marks for the dealers as in force for many years.

New Boiler for Lang Paper Co.

The roofing and felt paper manufacturing concern of the Lang Paper Company, formerly of this city, and now with plant established in Gloucester, N. J. is being equipped with a new boiler room outfit including a high power Badenhausen Boiler, which is under way of installation at the present time. With the completion of the installation of the new boiler there will be added other power units which will enable the firm to produce its line of felts and roofings in greater capacity, as the new equipment is of the highest pressure type that facilitates speedier production. The addition of this new power equipment to the plant will give it most modern machinery and augments plans for broadening operation and rendering better service in shipments of products. There is maintained in the Land Title Building, a Philadelphia executive office, which is devoted to the sales services of the company.

Tablet To Lieut. Considine Unveiled

Labor Day services of the Fifth Division Society of the United States Army included a special tribute to the late Lieutenant Raymond J. Considine, World War officer, member of the Paper House of Pennsylvania, and brother of the present head of the firm, Norbert A. Considine. A special parade in his honor and the presentation of a bronze tablet to the Poor Richard Club, the fraternity of Philadelphia advertising men, marked the Labor Day tribute to the late member of the firm. The presentation of the tablet was made upon behalf of the veterans by Philip J. McCook, of New York, honorary president of the organization. The inscription on the tablet reads: "Raymond J. Considine, First Lieutenant, 61st United States Infantry. In recognition of his gallant



A Timely Reminder

To The Mills Not Yet Equipped With

Briner Economizers

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A mill does not necessarily have to be extensively altered to permit installation of Briner Economizers. They are being effectively installed on machine room roofs, and outside machine room walls. Ask us to survey your particular requirements.

Last winter, those excessive steam costs were a source of trouble for you. Perhaps you recall that you determined to correct the situation before another winter. And possibly your intentions have melted away during these balmy summer months.

But cold weather again approaches with its ominous threat to repeat your winter troubles. Are you willing to struggle again with the problem of how to maintain proper conversion costs in the face of steadily mounting steam costs for heating and ventilating.

Regardless of the type, design, size or age of your mill, you owe it to yourself and your plant, to plan with our engineers now for the installation of Briner Economizers before extreme cold weather sets in.

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services to his country and his friends, Died, February 10, 1928, of wounds received during the World War." Lieutenant Considine, was a native of Williamsport, Pa., and made his home in this city for many years, being associated with his brother in the organization and conduct of the Paper House of Pennsylvania. His death two years ago was a blow to the paper trade community where he had many friends and was highly esteemed for his genial personality. His death followed a siege of pneumonia from which he suffered and owing to his lowered vitality and resistance that resulted from wounds received in battle at Cunel, France, was unable to survive. The society placed a wreath on Lieutenant Considine's grave in Holy Cross Cemetery as part of the memorial services and then marched in a body to the Poor Richard Club, where the unveiling ceremonies took place.

New Method of Printing Papers

In conjunction with the mill manufacturing its lines of papers the Matthias & Freeman Paper Company, 143 North 5th street, has perfected a process of printing from the dry end of the paper making machine in the course of manufacture and without removal of the product from the machine. The new method embodies printing the papers and imprinting designs while the paper is still in the machine and enables the firm to save 40 per cent on the cost of the paper so designed. This process of printing from the dry end of the machine gives the Matthias & Freeman Company an opportunity to pass its papers on the consumers in the converting branches of the trade at this saving of the finished products. The lines of papers which are so printed are used by bag manufacturers, box makers, book makers, printers, and by paper dealers for wrapping papers. The Matthias & Freeman Company is one of the oldest box and printing paper concerns in the city and has long made paper box and bag manufacturers supplies a specialty, perfecting its own products in these lines, and marketing them under its own label.

Frank H. Matthias Married

Wedding bells chimed for Frank H. Matthias, of the Matthias & Freeman Paper Company, and son of the head of the Company, Walter Matthias, who last week was wedded to Miss Maude C. Wright, of Norwood, Pa. The wedding took place at the Norwood Emanuel Lutheran Church. Following the ceremony the young couple left for an automobile honeymoon in the Canadian resorts, where they will remain for the next month. The groom is the firm's representative in the Empire State.

Charles McDowell Back From Cruise

Charles McDowell, head of the McDowell Paper Mills, Manayunk, has returned to his desk after a cruise along the coast as the guest of Charles Eisenlohr on his yacht the *Cohrinarie* for the past few weeks. The cruise extended from the Coast of Maine and other New England fishing resorts, with stopping points at Hampton, Long Island, and north Atlantic resorts, where the time was spent in golfing and in enjoyment of deep sea fishing.

Morgan H. Thomas Returns

Following a prolonged summer sojourn at Ocean City where he has been recuperating from his recent illness, President Morgan H. Thomas, of the Garrett-Buchanan Company, 16 South 6th street, has returned to his city home and is now making short visits to his place of business daily. President Thomas was confined to the Bryn Mawr Hospital last spring for several months after undergoing a series of operations and left in July for the Atlantic seashore resort to regain his health.

Charles M. Levis Back From Adirondacks

Charles M. Levis, president of Curtis Bros., with Philadelphia executive offices in the Public Ledger Building, and mills at Newark, Del., has returned to his desk after spending the summer in the Adirondacks.

Paper Demand in Indianapolis Improves

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., September 8, 1930—Paper business in Indianapolis, particularly the fine paper market is picking up. This is encouraging after a summer of rather indifferent demand. Not only that but the fall seems fair to see further increases. In the first place the direct by mail advertisers are becoming more active. The coming of the fall sales season has aided this to some extent and before long the holiday season will be creating a further demand. It is reported that some of the larger institutions in this section of the state are planing quite extensive mail campaigns for the last quarter of the year. Reports from the printing industry here also are encouraging. Some of the larger plants report more work in prospect and already are beginning to think of their paper needs.

Demand for wrapping paper also shows a slight increase. This is bound to improve further, it is said, when the fall selling season really gets under way. Other lines of common paper also are said to be in a better position than a month ago. Newsprint is holding about the same as it has for a couple of weeks. However, there are signs of improvement. Orders are becoming larger and more interest is being taken in the market.

Demand for building papers is very poor. In fact this has been one of the worst seasons in the history of this section for such merchandise. Nor does there appear much hope for fall. Each month sees the volume of new construction shrink below that of last year, in some cases as much as 50 per cent.

Glassines and cellophane continue to be very popular, due largely to the new uses found for these products.

Injured Paper Mill Workers Granted Awards

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., September 6, 1930.—At a hearing in Compensation Court held here a number of injured paper mill workers were granted awards. Miss Alice Clark was granted $219.19 for the loss of an index finger while in the employ of Taggart Brothers in this village. Donald Holmes, an employe of the National Paper Products, received an award of $19.38 a week until the next session, with funds for medical treatment. An award of $172.09 was obtained by James Buckley for loss of the use of his hand sustained from injuries while working for the Brownville Board Company and the case was ordered closed. Other awards included the following: Franklin Berry, an employe of the Dexter Sulphite Pulp and Paper Company, $50; Charles Watts, Island Paper Company, $19.25; Hubert Smith, Howland Bag and Paper Company, $200.

Other Northern New York paper mill workers to receive compensation at a session held at Saratoga Springs included Robert Burns, who suffered the loss of an index finger while working for the Stevens and Thompson Paper Company. He was awarded $540. Tim Sershia was awarded $150 for facial disfigurements while employed at the Thomson plant of the United Paperboard Company. Other cases were continued for re-examinations at future dates.

Bids for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 10, 1930—The Government Printing Office has received the following bids for 11,200 pounds of 24 x 36 high finish sulphite paper; Reese & Reese, Inc., at 7.3 cents per pound; Barton, Duer & Koch Paper Company, 9.49 cents; Tarentum Mills, 7.5 cents; and Charles G. Stott & Co., 9 cents.

The Printing Office has also received the following bids for 5,000 sheets of 22 x 28 photo mount board; Whitaker Paper Company, at $52.00 and $55.00 per M. sheets; R. P. Andrews Paper Company, $59.00 and $70.00; Barton, Duer & Koch Paper Company, $56.50; Charles G. Stott & Co., $59.00; and Dobler & Mudge, $70.40.

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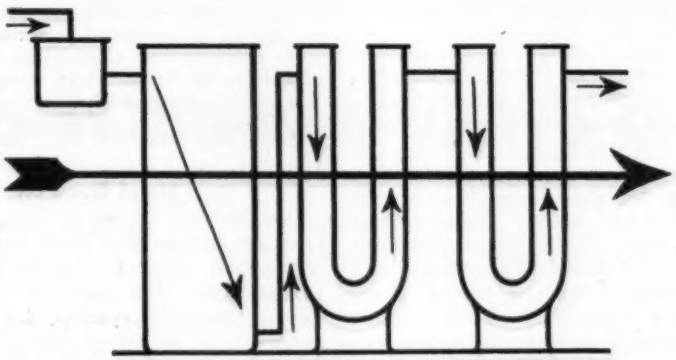

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501 FIFTH AVENUE, NEW YORK

See descriptive article in Paper Trade Journal of July 17th, page 33

AMERICAN DELTHIRNA CORPORATION

Caslon Bond Distributors Meet

Paper merchants from many parts of the country gathered far up on the Northern peninsula of Michigan at the little town of Munising on Lake Superior to attend the first annual meeting of Caslon Bond distributors held at the Munising Paper Company Mill on August 14.

Plans and programs for the future progress of Caslon Bond were discussed by George M. Seaman, executive director of the Munising Company, C. H. Worcester, president, and W. A. Munro, production manager. A trip through the mill and an inspection of the new power plant and other improvements followed, also a discussion of advertising plans for the next year.

On the following day the meeting moved to Blaney summer resort, where a short business session was held. The scene then shifted to the golf links and to the airplane field, where a Ryan monoplane was chartered for the use of the party. Several paper men, including Carl Maglathlin of the Lindsay Paper Company, Philadelphia and Ralph Collins, Marquardt, Blake & Decker, New York, took their initiation in the air.

Winners in the golf tournament were Ralph Barber, Tobey-Fine Papers, St. Louis, low net, Bill Ward of Bermingham & Prosser, Kalamazoo low gross. Prizes for holes in two went to Mr. Worcester and to Bill Ward; and Pete Massey, of Seaman, won a prize for the most clean misses. Austin Dwight, of Dwight Brothers, Milwaukee, won the honors in the high total division.

It was voted to make the meeting in the North an annual affair.

Those present included: Joe Bermingham, Bermingham & Prosser Company, 2112 Central street, Kansas City, Mo.; Ralph Collins, Marquardt, Blake & Decker, Inc., 153 Spring street, New York City; H. S. Case, Cloverland Paper Company, Munising, Michigan; Austin Dwight, Dwight Brothers Paper Company, 275 Milwaukee street, Milwaukee, Wis.; Leo Golisch, the Whitaker Paper Company, 411 W. Ontario street, Chicago; Jim Gilbert, the Whitaker Paper Company, 48 Great Jones street, New York City; Ben Johnson, the Whitaker Paper Company, 1005 Beaver avenue, Pittsburgh, Pa.; J. C. Marvin, Newhouse Paper Company, 515 Washington avenue, North Minneapolis; Louis Simon, Bermingham & Prosser Company, Kalamazoo, Mich.; Bill Ward, Bermingham & Prosser Company, Kalamazoo, Mich.; Roger Little, Dwight Brothers Paper Company, 626 S. Clark street, Chicago, Ill.; Ralph Barber, Tobey-Fine Papers, Inc., 1006 Clark avenue, St. Louis, Mo.; Carl Maglathlin, Lindsay Paper Company, 804 Sansom street, Philadelphia, Pa.; Earle Milligan, Seaman-Patrick Paper Company, 1225 Vermont avenue, Detroit, Mich.; P. J. Massey, Seaman Paper Company, 411 W. Ontario street, Chicago, Ill.; C. H. Worcester, George M. Seaman, A. W. Redfield and Donald Hough, Chicago; Bill Darling, New York, Alec Munro, M. E. McGarry, Bill Jackson, Ed. Bartels, E. P. Strong and F. M. Baldwin, Munising.

Du Pont Cellophane Changes

The Du Pont Cellophane Company announces the appointment of B. C. Robbins as promotion manager of the company, effective August 15. Mr. Robbins was formerly assistant advertising manager of the Du Pont Cellophane Company.

Effective September 1, Mr. P. A. Dillman, formerly advertising manager of the DuPont Viscoloid Company becomes advertising manager of the DuPont Cellophane Company.

Mr. William J. O'Keefe and Mr. M. Crewford Pollock have joined the sales promotion department of the company. Mr. O'Keefe was formerly of the Campbell-Ewald Company, while Mr. Pollock has been associated for the past two years with Lord & Taylor of New York City.

New Gears & Forgings Bulletins Issued

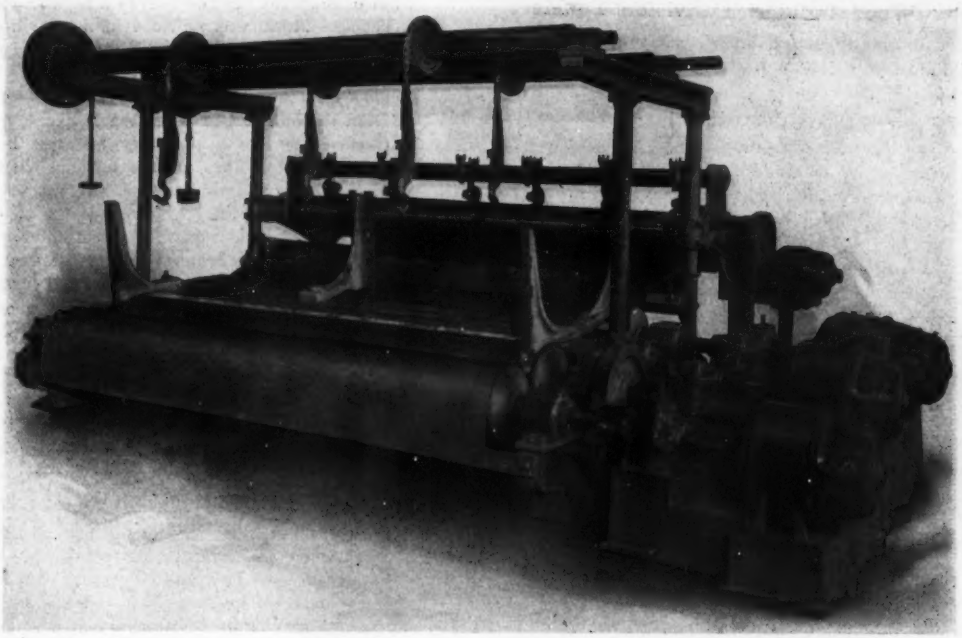
Two new bulletins have just been published by Gears and Forgings, Inc., of Cleveland, Ohio. Bulletin "B-1" explains the advantages of the Planetary Speed Reducers manufactured by the corporation. It interprets the principals and advantages to the user of its patented features, and also points out efficiencies as to economy and adaptability. Bulletin "C-1" outlines the advantages of Worm Gear Speed Reducers, their particular field, and the features of distinctive merit in the G & F design and manufacture. Both bulletins are profusely illustrated.

Hand Book on Steel Tanks

Lancaster Iron Works, of Lancaster, Pa., with offices at 370 Lexington Avenue, New York, and Land Title Building, Philadelphia, have published a valuable and comprehensive hand book on steel tanks. This interesting work contains specifications of standard sizes and capacities, fire protection and insurance requirements for the use of volatile liquids, specifications of steels for various purposes and a wealth of useful information and data in connection with design and installation.

A GROUP OF CASLON BOND DISTRIBUTORS

On the golf links at Blaney Park near the Municing Paper Company Mill, at Munising, Mich., where the meeting of Caslon agents was held August 14 and 15. Standing left to right: A. W. Redfield, F. J. Baldwin, Ben Johnson, G. M. Seaman, Roger Little, C. H. Worcester, Austin Dwight, Ralph Collins, J. C. Marvin, Bill Jackson, Louis Simon, Leo Golisch, M. E. McGarry, Jim Gilbert, Alex Munro, Ed Bartels, Joe Bermingham, P. J. Massey, Bill Ward, Ralph Barber, Bill Darling, Carl Maglathlin, E. P. Strong and Earle Milligan.



The counter-weighted lifting hooks are required only to equalize soft ends, not to reduce roll hardness.

The M & W Electric Drive Is SAFER

Yes, we still build belt-driven Winders — and good ones! But we consider the Electric Drive a long step forward.

THE primary reason for using the M & W Electric Drive for winders is that it winds better rolls. But safety is important, too.

Safety inspectors are quick to notice the improvement as between this compact group of electric motors, driving the winder drums through speed reducers and couplings, and the conditions with older types of drive. Not only safety, but floor space and cost of maintenance are conserved by using electric drive.

With M & W Electric Drive, lower cost and better product go with safety. Cost of winding is reduced because operating and maintenance costs are reduced. The need for skilled supervision is far less, and the risk of winding too hard or too soft is virtually eliminated. The product is better, more uniform and more saleable.

Ask for the new Winder Bulletin, and consider how much your own winding conditions might be improved by the accurate automatic control afforded by the M & W Electric Drive.

THE MOORE & WHITE COMPANY
Established 1885
15th ST. & LEHIGH AVE. PHILADELPHIA, PA.

Wood Industries Division To Meet

The following tentative program has been arranged for the Wood Industries Division National Meeting, Pennsylvania Hotel, New York, October 16-17:

OCTOBER 16, 1930

10:30 A.M. *Fuel Session*

"Value of Wood Waste as Fuel," by W. E. Biggs, Chief Engineer, W. E. Biggs Company, Knoxville, Tenn.

"Design of Fuel Feeders for Wood Burning Furnaces," by M. A. Hofft, president, M. A. Hofft Company, Indianapolis, Ind.

12:30 P.M. Luncheon Get-together

2:00 P.M. *Wood Characteristics Session*

"Relation of Density to Strength of Timbers," by Snyder W. Erickson, Forest Products Engineer, National Lumber Manufacturers Association, Washington, D. C.

"Shrinkage in Wood, with Particular Emphasis on Longitudinal Shrinkage," by Arthur Koehler, in charge, Section of Silviculture Relations, Forest Products Laboratory, Madison, Wis.

"Curved and Bent Plywood," by Thomas D. Perry, Works Manager & Engineer, New Albany Veneering Co., New Albany, Ind.

8:00 P.M. *Recovery of Waste Wood Products Session*

"Binders for Fibrous and Granular Woods," by W. E. Emley, Chief, Organic and Fibrous Material Division, Bureau of Standards, Dept. of Commerce, Washington, D.C.

"Opportunities for Utilization of Wood Waste in the Chemical Industries," by B. B. Fogler, Mech. Engr., Arthur D. Little, Inc., Cambridge, Mass.

"Developments in Stabilization of Painting Practice for Wood," by F. L. Brown, Sr. Chairman, Forest Products Laboratory, Madison, Wis.

OCTOBER 17, 1930

9:00 A.M. *Plant Inspection Trips*

2:00 P.M. *Machinery Session*

"Abrasive Standards for Woodworking Operations," by Elmer C. Schacht, Factory Manager, Behr-Manning Corporation, Troy, N. Y.

"Improvements in Steels for Wood Knives and Saws," by Henry B. Allen, Chief Metallurgist, Henry Disston & Sons, Philadelphia, Pa.

"Types of Saws and Saw Jointing for Edge Matching Cores and Solid Tops."

6:30 P.M. *Dinner at Hotel*

"Need of Forest Products Engineers in the Wood Working Industries," by Prof. Nelson C. Brown, Acting Dean, New York State College of Forestry, Syracuse, N. Y.

Other interesting speakers and a remarkable foreign film is promised us.

Employees Have Picnic at Cornell

CORNELL, Wis., September 2, 1930.—Almost the entire community turned out on Saturday to attend the Cornell Wood Products Company's third annual picnic which was held at Lake Hallie. The place with its spacious and beautiful grounds was an ideal spot for the occasion; this and a perfect day added to the enjoyment of the crowd.

A bus and several trucks together with the band wagon, which was a work of art decorated with pictures and safety slogans, left the high school grounds at 9:00 o'clock, loaded to capacity with grown folks and children.

By noon the park was filled with groups of people around tables under the trees or in the large dining hall enjoying their picnic dinners. The kiddies kept the playgrounds, swings and other equipment busy all day and the Shetland ponies which had been provided were a source of continued enjoyment for the children. The "crazy house" caused shrieks of excited laughter throughout the day and proved a popular amusement for the young people. Music was provided in the pavilion the entire afternoon by the Coggins orchestra for those who cared to dance.

The grown-ups enjoyed golf, horseshoe pitching, and kittenball games. The tug-of-war between the business men and a team from the mill caused considerable excitement. The uptown team claimed the reason that they lost was because the umpire was unfair and that they made a mistake when they hitched the end of their rope to only one tree. They think the result would have been different if they had hitched the rope to two trees instead. The Cornell band furnished music both in town before the start and at the picnic grounds during the day.

John Thune and his helpers served over 100 gallons of ice cream and more than that amount of lemonade besides the coffee.

Groups of contented people were sitting around visiting and enjoying the cool breeze and the crowd seemed reluctant to leave, many staying until after six o'clock.

The committee in charge are to be congratulated on the success of the picnic as all were unanimous in declaring the third annual picnic to be bigger and better than ever before.

Simplification of Grocers Bags

A very important step in the paper bag industry was taken in 1925, when the industry, in co-operation with the Bureau of Standards and the National Associations representing Wholesale Paper Dealers and Grocers, Retail Grocers, Chain Stores and Bag Machine Manufacturers adopted standard sizes for Grocers Bags.

The "SS" stamp has since become universally recognized and buyers demand Standard Size Bags.

Today the paper bag industry has again taken another forward step. Manufacturers representing over 80 per cent of the industry have agreed to standardize the basis weights of paper used in making grocers bags. These standards are as follows:

¼ to 2-27	Basis	24	x	36	— 480
3 and 4-30	"	"	"	"	
5 to 8-33	"	"	"	"	
10 to 12-35	"	"	"	"	
14 to 25-39	"	"	"	"	

In the opinion of all parties concerned, these basis weights represent the best normal for average use. Heavier bags may be necessary in some cases, but for ordinary retail store use these weights are correct and are the results of many years experience on the part of manufacturers, jobbers and consumers.

The co-operation of the Bureau of Standards, together with the National Association (as above named) has been secured, and standard bags may be stamped "SSW" (Standard Size and Standard Weight) when the work of revision of Simplified Trade Practice Recommendation No. 42 shall have been completed by the Bureau of Standards.

Meanwhile, the majority of the grocery bag manufacturers are using the standard basis weights of paper in their bags and the buyer of bags has, for the first time, an accurate means of comparison of values.

The former base list prices of bags have been revised and a new list has been issued. The revised list will enable the industry to escape from the cumbersome discounts now prevailing.

Fort Edward Mill Increases Operations

[FROM OUR REGULAR CORRESPONDENT]

FORT EDWARD, N. Y., September 6, 1930.—Increased operations have been placed in effect at the local plant of the International Paper Company and a schedule of five days a week is being observed. The mill has been running on greatly reduced schedules for several weeks past but the belief prevails that from now on conditions will continue to improve. The company employs several hundred workers and has operated steadily since being overhauled about two years ago for the making of high grade paper.

"Here's the type of color I like!"

DU PONT Brilliant Crocein FL has several characteristics which place it above all other colors of its type. It gives a sheet practically free from two-sidedness, being superior in this respect to any other red dyestuff used on paper.

It is extremely fast to light, being much faster than the ordinary Crocein Scarlet. It has excellent affinity for fibers and gives clear back-waters, even in heavy shades. It does not foam in the beaters or on the machine, as is usually the case with other acid scarlets.

It is practically non-bleeding. It has excellent solubility and exceptionally good tinctorial power.

For bonds, writing, cover, and other papers it produces all shades from pink to deep scarlet. By shading it with du Pont Brilliant Paper Yellow Conc., salmon shades are produced. When used alone or when shaded with du Pont Orange RO, brilliant scarlets may be obtained. These shades, and other similar combinations, are also extremely fast to light.

Let a du Pont salesman tell you more about this dyestuff, and many other colors you will find useful. Let him also tell you the story of du Pont technical service. We are ready to help on all color problems.

The services of our laboratories and our technical men are at your command. Write direct or to the nearest branch office.

DU PONT DYESTUFFS
REG. U.S. PAT. OFF.

E. I. DU PONT DE NEMOURS & COMPANY, INCORPORATED

Dyestuffs Department, Wilmington, Delaware

Sales Offices in: Boston, Mass., Charlotte, N. C., Chicago, Ill., New York, N. Y., Philadelphia, Pa., Providence, R. I., and San Francisco, Calif. Represented in Canada by Canadian Industries Limited, Heavy Chemicals Division, Sterling Tower, Toronto, Ontario, Canada.

Trade Mark Department

CONDUCTED BY NATIONAL TRADE-MARK CO., WASHINGTON, D. C.

The following are trade mark applications pertinent to the paper field pending in the United States Patent Office, which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade Mark Company, 900 F street, N. W., Washington, D. C., trademark specialists. As an additional service feature to its readers, PAPER TRADE JOURNAL gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering.

BALIA, Ser. No. 299,155. Paul Omer Alexis, Reau, Glenay, France. For glues.

CREAM. Ser. No. 299,809. A. E. Staley Manufacturing Company, Decatur, Ill. For sizing used for paper purposes.

TUFCOTE, and representation of a rhinoceros, Ser. No. 300,554 United Paper Company, East Braintree, Mass. For durable specially-treated reinforced waterproof wrapping paper.

JACK TAR, ALL WEATHER CADDY. Ser. No. 300,615. Chicago Carton Company, Chicago, Illinois. For cartons and boxes made of box board.

CAMEO, in a hexagonal-shaped figure. Ser. No. 300,678. Schorsch & Co., Bronx and New York City, New York. For paper bags and paper sacks.

LUXURY, in a hexagonal-shaped figure. Ser. No. 300,679. Schorsch & Co., Bronx and New York City, New York. For paper bags and paper sacks.

MYRACOL.—Ser. No. 299,455. Mittag & Volger, Incorporated, Park Ridge, N. J. For carbon paper and typewriter ribbons.

MILESTONE PORTRAITS.—Ser. No. 300,026. James P. Langley, doing business as Langley Studios, Berkeley, Calif. For portrait album leaves and other portrait mountings.

ALGONQUIN.—Ser. No. 300,128. Hano Paper Corporation, New York City. For paper products—namely, bond paper for writing and print purposes, index, brixtol, onion skin, cardboard, pads, etc.

M. & M.—Ser. No. 300,277. Mittag & Volger, Inc., Park Ridge, N. J. For carbon paper and typewriter ribbons.

MITVOL.—Ser. No. 300,227. Mittag & Volger, Inc., Park Ridge, N. J. For carbon and typewriter ribbons.

BARRISTER BOND.—Ser. No. 300,407. Gilbert Paper Company, Menasha, Wis. For bond paper.

RAYONIER.—Ser. No. 300,436. Rainier Pulp and Paper Company, San Francisco, Calif. For wood pulp.

D S W & Co. (monogram) and fanciful design.—No. 285,839. D. S. Walton & Co., New York City. For paper bags.

MARSENETTE—No. 299,141. Marsene Transparent Paper Corporation, Gary, Ind. For transparent paper.

WEST COAST BOND—No. 302,136. Oregon Pulp and Paper Company, Salem, Oreg. For bond paper.

REGAL—302,684. Hill Independent Manufacturing Company, Germantown, Philadelphia, Pa. For hand stamps.

DECOLINS—No. 302,801. American Lace Paper Company, Milwaukee, Wis. For paper napkins.

COMMANDER—No. 302,813. Crown Willamette Paper Company, San Francisco, Calif. For printing paper.

DENSITE—No. 302,870. Nekooska-Edwards Paper Company, Port Edwards, Wis. For greaseproof paper.

SCOROLL—Ser. No. 298,360. Leo Schlesinger Company, Inc., New York City. For devices for use in playing the game of bridge, namely, a score-pad-holding device, score cards, pads, etc.

PARAVAL—Ser. No. 299,966. The Glassing Paper Company, West Conshohocken, Pa. For paper, more particularly glassine paper.

HERMETON—Ser. No. 302,181. Hermeton Limited, London, England. For cardboard cartons.

FORT CRALO, and representation of two small girls.—Ser. No. 302,205. A. P. W. Paper Company, New York City. For toilet paper.

PERKINS EASY MIX 1776—Ser. No. 302,443. Perkins Glue Company, Lansdale, Pa. For glue containing casein.

SONNY BOY—Ser. No. 302,709. Wax Paper Products Company, Omaha, Neb. For cake and bread wrappers.

BRUNSWICK, and design.—Ser. No. 302,726. Dennison Manufacturing Company, Framingham, Mass. For crepe paper.

B-W. Ser. No. 299,825. Charles Bruning Company, Inc., New York City. For sensitized paper for making black-line prints.

WHITEHALL. Ser. No. 300,018. Hampshire Paper Company, South Hadley Falls, Mass. For writing and printing paper.

FANCIFUL REPRESENTATION OF A WING. Ser. No. 300,196. Alex. G. Highton, Inc., Newark, N. J. For business cards, catalogues, circulars, folders, books, booklets, pamphlets, display cards, counter cards, broadsides, posters, letters for direct mailing.

DIPLOMACY PARACHMENT. Ser. No. 300,672. Saxon Paper Products, Inc., New York City. For bond paper.

OLD GUARD BOND. Ser. No. 300,676. Saxon Paper Products, Inc., New York City. For bond paper.

CUSTOMS BOND. Ser. No. 303,181. Hampshire Paper Company, South Hadley Falls, Mass. For writing and printing paper. The trade-mark consists of a fanciful design. Ser. No. 303,408. United States Envelope Company, Springfield, Mass. For book paper.

RINOTUF. Ser. No. 303,464. Bradner Smith & Co., Chicago, Ill. For tag board, cover paper, and bristol.

WHITE SEAL. Ser. No. 303,486. Oxford Paper Company, New York City. For coated paper.

PUL-A-NAP. Ser. No. 303,498. Yorkville Paper Company, New York City. For paper napkins.

MICHELANGELO, portrait, and fanciful picture. Ser. No. 303,775. Montag Brothers, Inc., Atlanta, Ga. For writing paper and envelopes.

Hamilton Wins Freight Rate Fight

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, September 2, 1930.—Considerable interest was manifested in the Miami Valley the past week on receipt of the news from Washington that Hamilton alone had won an important decision August 26 from the Interstate Commerce Commission in a fight for freight rates that will permit Hamilton competition in the Western market.

By this decision, the Commission held that Hamilton and that city alone was discriminated against in regard to freight rates on paper from Hamilton, which is located in Butler county, to Oklahoma cities.

It was pointed out that paper manufacturers in the Fox River section of Wisconsin were given a setback in their reported efforts to control the Oklahoma market when the Commission handed down a decision asserting that freight rates on paper from Hamilton to Oklahoma, favor Wisconsin towns and cities.

The Interstate Commission ordered the railways to stop the alleged discrimination against Hamilton.

The decision came on the complaint of the Champion Coated Paper Company of Hamilton.

Interests in the cities near Hamilton, among them Dayton, intervened and sought to influence the Commission in deciding that they were being discriminated against as much as was Hamilton, only that Hamilton has proved discrimination.

It was reported that the Fox River group was aided in the fight by the Wisconsin Paper and Pulp Manufacturers' Traffic Association. It is said the Fox River group has been enjoying a rate from five to eight and one-half cents lower than Hamilton's rate.

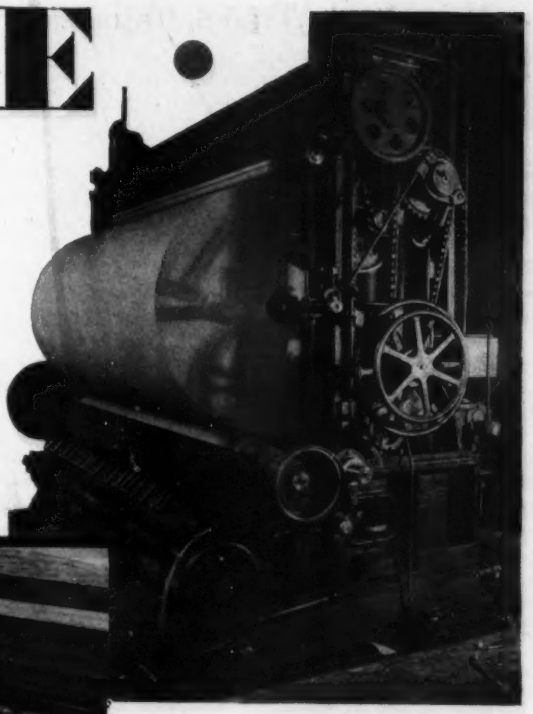
The Wisconsin group sought to have the commission increase the rate from Hamilton while it attempted to obtain a lower rate for itself, according to the version given out in the Miami Valley.

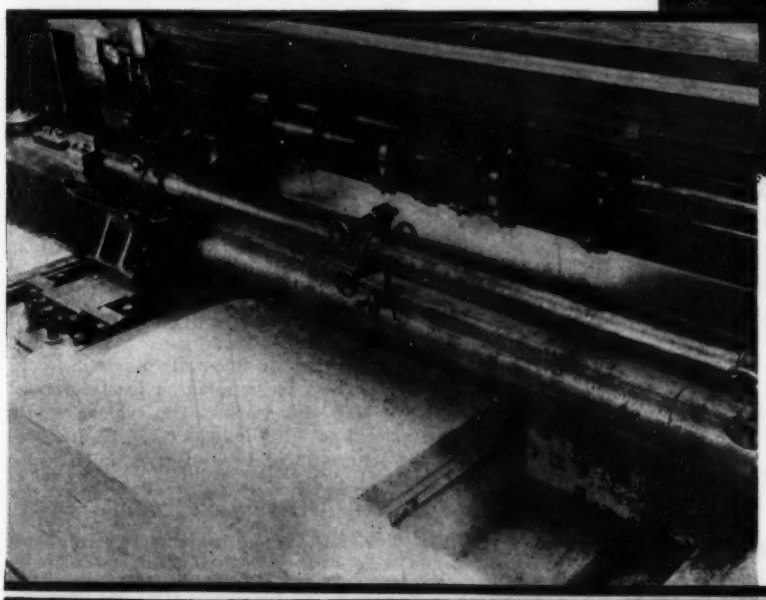
There has been keen competition for the Oklahoma market, if the battle over the freight rates is to be considered significant of this reported fact.

Settlement of the long disputed question at least has caused an

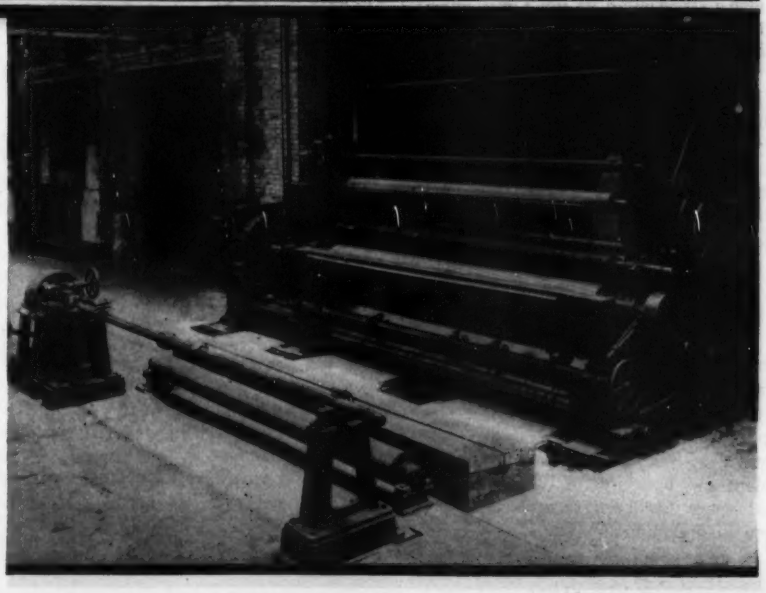
UNIQUE.

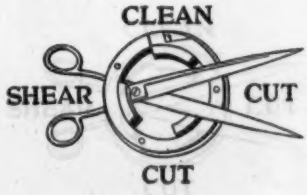
This Langston Slitter is the only installation of its kind. First—it is used as a winder at the end of the board machine. Then, while sheets are being made, the Langston is rolled forward





on a special track to the position shown below. Here it becomes a rewinder and in both cases every roll is tightly wound, square-edged and free from dust.





Samuel M. Langston Co. ◆ Camden, N. J.

New York Trade Jottings

American Folding Box Company, Inc., has been chartered under the laws of the State of New Jersey with a capital stock of $10,000.

* * *

The Westinghouse Electric and Manufacturing Company announces the appointment of Charles R. Jones as assistant northeastern transportation manager.

* * *

Robert H. Hervey has resigned as general sales manager of Louis Dejonge & Co., coated paper manufacturers, of 71 Duane street, New York. Mr. Hervey plans to take a short rest.

* * *

E. A. Charlton, vice-president of the International Paper Company, has purchased a large apartment in 1 Beekman Place, New York, the 100 per cent co-operative now nearing completion.

* * *

Walter Hicks, of the Daniel M. Hicks Company, Inc., dealers in paper mill supplies, of 200 Fifth Avenue, New York, has returned from an enjoyable vacation spent at Shelter Island, N. Y.

* * *

Gatti Paper Stock Corporation, of 122 East 42nd street, New York, with warehouses and packing plants in Hoboken, N. J., and Boston and Holyoke, Mass., has filed notice of an increase in capital stock from $200,000 to $1,150,000.

* * *

Charles W. Boyce, secretary of the American Paper and Pulp Association, with offices at 18 East 41st street, New York, has just returned from an extended tour of the Great Lakes States, during which he visited most of the leading paper mills.

* * *

Following its usual custom the New York Division of the Salesmen's Association of the Paper Industry resumed its regular weekly luncheons and meetings last Monday in the lower grill of the Fraternities Clubs, New York. Endicott Rantoul, vice-president in charge of the New York Division, occupied the chair. S. C. Knode, president of the organization, and many other leading figures in the paper industry, also graced the proceedings with their presence. Reports on practically all grades of paper were made by representative members and distinguished guests and one and all agreed that the summer months had been very disappointing.

* * *

September is the month appointed for the inter-division competition for the Harbison Cup, and the New York Division of the Salesmen's Association of the Paper Industry will hold its outing at Leewood Golf Club on Thursday, September 18. A special appeal is being sent to the members to turn out in full force with the hope that the New York Division may finally win the Harbison Cup. Handicaps for the tournament are based on members' club handicaps if they have any, or if not on their three best gross scores for the current season. In addition to the team competition there will be the *American Paper Merchant* Trophy offered for the best net score on eighteen holes by any member of the association, and the President's Trophy for the best net score on either nine holes. Also, there will be the usual local prizes for which members and guests are eligible to compete.

Lockwood Envelope Specialties Organized

[FROM OUR REGULAR CORRESPONDENT]

WESTFIELD, Mass., September 9, 1930—The Lockwood Envelope Specialties, Inc. has been organized and obtained quarters in the United States Whip Company building to manufacture envelopes and paper specialties. R. B. Lockwood is to leave the post of Treasurer of the Old Colony Envelope Company to become President and Treasurer of the new concern. About 5,000 square feet of space has been secured and it is expected to get the concern in operation by Oct. 1.

Russian Pulpwood for Up State Mills

[FROM OUR REGULAR CORRESPONDENT]

OGDENSBURG, N. Y., September 6, 1930.—About thirty-nine carloads of Russian pulpwood passed through here this week en route to paper mills in Northern New York. The shipments were the first of many others which will follow from Three Rivers, P. Q., and the imported product is consigned to the Gould Paper Company, Brownville Board Company, National Paper Products Company, Newton Falls Paper Company and the Dexter Sulphite Pulp and Paper Company. All are sharing about equally in the division of the pulpwood which is expected to necessitate over 200 freight cars before the hauling task is completed. The cars are being forwarded by way of the Canadian Pacific Railway to their final destination.

Two shipments of the pulpwood have previously been received at the plant of the Dexter Sulphite Pulp and Paper Company and the high quality of the product has resulted in the placing of additional contracts. Both consignments amounted to about 10,000 cords and passed through this city during June. The Sherman Paper Company and Martin Paper Company, of Norwood, have also received a considerable quantity of the imported product in previous shipments.

St. Lawrence Expands Forestry Department

CANTON, N. Y., August 26, 1930—The forestry department of St. Lawrence University has widened the scope of its work and in addition to the appointment of William J. Endersbee as extension forester it was announced this week that Ralph G. Unger has been appointed to take charge of the activities in Franklin and Clinton counties. For some time past he has been connected with the forestry division at Syracuse University and is consequently well qualified for his new duties. The department is preparing to hold exhibits at a number of county fairs this fall when it will show the advantages and necessity of reforesting idle lands. Material for the displays has been secured from the United States Forestry Service at Washington.

Prof. F. M. Callward, head of the university forestry department, is personally in charge of the program at the Gouverneur fair this week and he will also conduct the exhibits at the Canton exposition next week. W. J. Endersbee will be in charge of the displays at the Jefferson and Lewis County fairs.

Hoquiam May Get New Pulp Mill

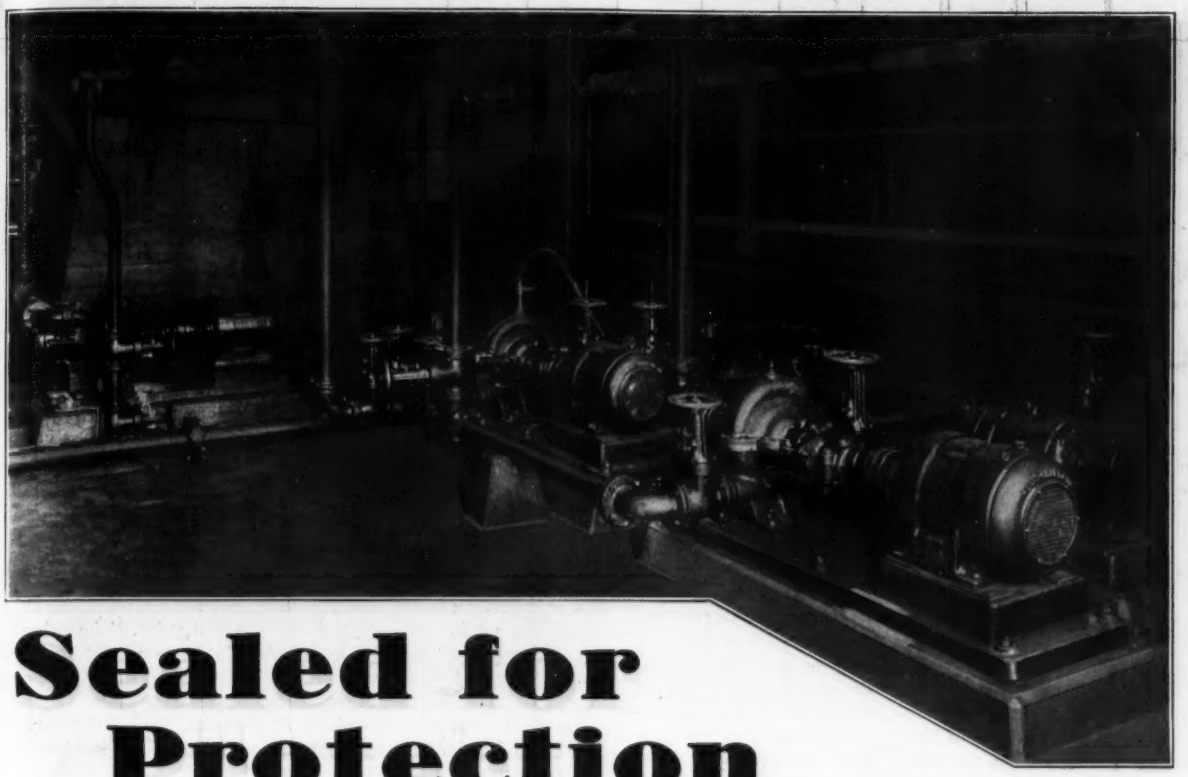
PORTLAND, Ore., September 2, 1930.—Announcement was made recently that a group of both eastern and western pulp and paper men were negotiating for a proposed site in Hoquiam, Wisconsin, where it was planned to locate a new project, which would probably be a 100-ton pulp plant. The report indicates that if a suitable site can be obtained work may get under way soon.

The plant would represent an investment of probably $2,000,000 and would demand a water supply of 10,000,000 gallons a day which the city of Hoquiam would provide through an arrangement with the city of Aberdeen under contracts entered into by the two cities some months ago when Aberdeen constructed an elaborate industrial water system.

The visitors who conferred with Mayor Smith of Hoquiam in regard to this enterprise included George Teren, Holyoke, Mass.; J. Anderson, New York; A. B. Galloway, Salem, Oregon; E. E. Hoitola and B. T. McBain of Portland.

To Build Memorial to G. H. Gould

LYON FALLS, N. Y., September 2, 1930.—A memorial chapel in honor of the late G. H. Gould, is to be erected in the Port Leyden Cemetery by his son, Harry P. Gould, president of the Gould Paper Co. The contract has been awarded to Architect D. D. Kane, of Watertown. The structure is to be constructed of marble, inlaid with brick, and it will have a large seating capacity.



Sealed for Protection

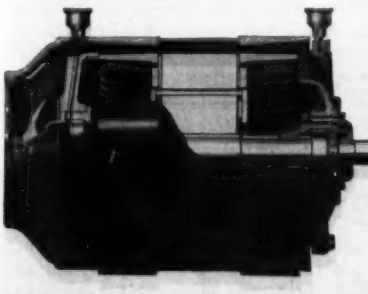
against corrosive gases and liquids

One 5 h.p. and two 15 h.p. (1730 r.p.m.) Type ARZ Motors operating Allis-Chalmers centrifugal pumps, handling brine in an Electro-Chemical plant.

Corrosive moisture and gases, often present in chemical plants, cannot harm Allis-Chalmers totally enclosed fan-cooled motors because the windings of these motors are thoroughly sealed from contact with the outside air.

Because of this protection against harmful corrosives, dust and dirt, the motors may be installed in out-of-the-way places with very little attention except periodic greasing—thus eliminating frequent and expensive inspection, cleaning and repairs.

And this protection is accomplished by a simplified design that includes no rubbing or revolving seals and that provides accessibility equal to that of the standard open type motor.



ALLIS-CHALMERS

Totally Enclosed Fan-cooled MOTORS

Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Pensacola, Fla.—The Armstrong-Newport Company, Pensacola, has work nearing completion on its new local mill for the production of insulating board, and proposes to have the main unit ready for service early in the fall. The plant is 75 x 960 feet, and will have a rated capacity of close to 100,000 board feet of finished material a day. It will be operated in conjunction with the local naval stores plant of the Newport Company, securing raw material in the form of stumps and waste wood on cut-over lands from that source. The plant will represent an investment of close to $1,000,000. The company was recently formed as a joint interest of the Newport Company, with headquarters at South Milwaukee, Wis., manufacturer of rosin, turpentine and kindred specialties, and the Armstrong Cork & Insulation Company, Lancaster, Pa.

Ansonia, Conn.—The S. G. Redshaw Company, manufacturer of paper boxes and containers, is planning the early rebuilding of portion of plant recently destroyed by fire with loss reported in excess of $40,000, including equipment and stock.

Los Angeles, Cal.—The Southern Paper Products Corporation, Los Angeles, recently organized with a capital of $1,500,000, is said to be planning the early operation of a mill in this vicinity for the manufacture of paper goods of various kinds. The new company will be represented by O'Melveny, Tuller & Myers, Los Angeles, attorneys. The organization is headed by Harry L. Dunn, South Pasadena, Cal.; Frederick N. Edwards and George H. Wood, Los Angeles.

Cloquet, Minn.—Fire recently destroyed a portion of Mill B, at the plant of the Northwest Paper Company, Cloquet, due to the explosion of an acetylene tank, with loss reported over $100,000, including equipment. The company is said to be arranging plans for early rebuilding. As previously reported in these columns, work is under way on an expansion program at this mill, consisting of a new operating unit, 125 x 725 feet, for which general contract is handled by the James Leck Company, 211 South 11th street, Minneapolis, Minn.; the Jacobson Engineering Company, Plymouth Building, Minneapolis, is engineer for the company.

Whippany, N. J.—The United Paper Board Company, 171 Madison avenue, New York, is said to be arranging for the early resumption of operations at its Hanover paperboard mill at Whippany, giving employment to about 80 men. The plant has been closed since June. Charles Daniel is treasurer.

North Bergen, N. J.—The Container Corporation of America, Inc., 111 West Washington street, Chicago, Ill., manufacturer of corrugated paper boxes and other containers, has concluded negotiations for the purchase of the plant and business of the Gibraltar Corrugated Paper Box Company, Hackensack Plank Road, North Bergen, and will operate as a unit of its organization under the name of the Gibraltar Division of the Container Corporation of America. The acquired plant is of modern type, constructed in 1927, and comprises about 2½ acres of floor space, with rated output of 25,000 tons of corrugated boxes a year. It is the purpose of the purchasing company to develop this plant to maximum output and the Sefton Division of the company, known as the Sefton Container Corporation, now occupying a leased plant at 882 Third Avenue, Brooklyn, N. Y., will be removed to this location and production concentrated with that of the Gibraltar company. As a source of corrugated board for the North Bergen mill, the parent organization will use its plant at Nixon and Fountain Streets, Philadelphia, Pa., and likewise will increase production at that point. The Gibraltar mill will continue under the direction of Samuel Katz and C. M. Thorson, heretofore president and vice-president, respectively, of the Gibraltar organization. With this latest acquisition, the Container Corporation of America, Inc., is operating a total of 19 plants in the eastern and middle west sections of the country.

Philadelphia, Pa.—The building occupied by the Empire Paper Company, 470 North Fifth street, was recently damaged by fire. An official estimate of loss has not been announced. The damage will be replaced.

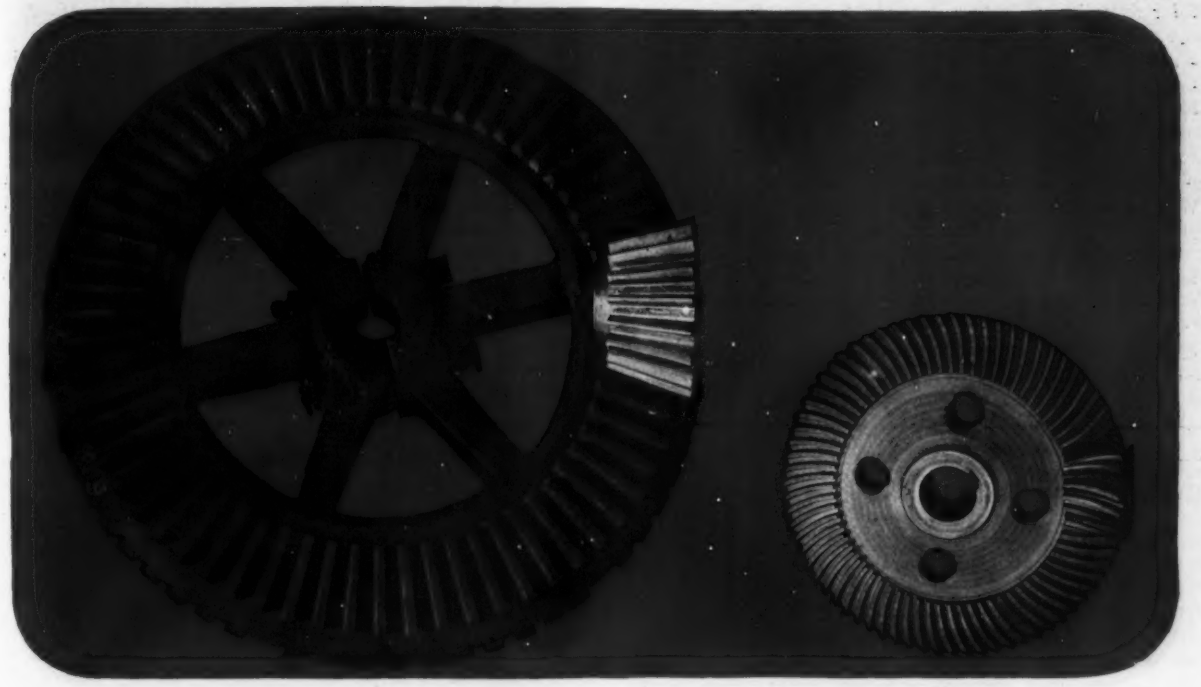
Whippany, N. J.—The Agar Box Board Company, Somerville, Mass., is holding to an active production schedule at its mill on Thomas street, Whippany, giving employment to a normal working force of about 100 men on a five-day week basis. It is said that this basis of output will be continued for an indefinite period.

Greenville, Miss.—The Chicago Mill and Lumber Company, Chicago, Ill., is maintaining active production at its new insulating board mill at Greenville, placed in service in July. The plant is giving employment to a regular working quota, and proposes to continue on the present schedule indefinitely. Southern hardwood waste is used as a source of raw material at the plant, being secured through the company's logging operations in this district.

Lambertville, N. J.—The former Mann Paper Mill, now owned by Wilkinson Brothers, Philadelphia, Pa., continues inactive. The plant has been shut down for some time past, and has been placed on the market.

Indianapolis, Ind.—The Zimmer Paper Products Company, Martindale avenue, near 19th. street, manufacturer of waxed and processed papers, is running on a 24-hour production basis, giving employement to a full working quota for the different shifts, and will hold to this schedule indefinitely. The company is furnishing a large quantity of waxed papers for bread-wrapping. It is occupying about 10,000 square feet of space in Building No. 12, in the Indianapolis Industrial Center, and has been running actively since last March, when it was established by Karl R. Zimmer and associates.

York, Pa.—Three local paper manufacturing plants have resumed operations on a full production basis, following a short curtailment. These include the Gilbert Wall Paper Company, which has been closed down for about three weeks, and which is said to have secured advance bookings to insure full sched-



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***Quiet* is the word — for coupled with its space-conserving trimness and its unusual power capacity is its smooth, noiseless, vibration-free performance. That means a lot in paper production — freedom from chatter and jump, from excessive breakage and undue wear on rolls and machine clothing.**

Precisely cut, perfectly matched, all metal gears, submerged in a full oil bath . . . more-than-adequate anti-friction bearings . . . sturdy, well-mannered stands that keep their feet out of the aisles . . . smoothly functioning clutches . . . a faculty for putting every ounce of power to most effective work . . . these are a few of the reasons for the steadily increasing acceptance of Bagley & Sewall Drives as standard equipment by mills that really care.

Four sizes, direct and compound types, for new or old machines of any size or speed... it will be worth your while to investigate their advantages.

The Bagley & Sewall Co.

Watertown, N.Y.

45

ule for several months to come; the York Wall Paper Company, and the York Card & Paper Company. The three plants are giving employment to a total working force of about 550 persons.

Niagara Falls, N. Y.—Fire, caused by a short circuit in the transformer room at the plant of the Defiance Paper Company, Niagara Falls, on August 30, did only a slight damage, which will be replaced at once.

Whippany, N. J.—McEwan Brothers, Inc., are running on a capacity schedule at their local Eden Mills, given over primarily to the production of folding paper box board. Two shifts are in service, with employment of about 170 men. It is proposed to hold to the present basis of output for an indefinite period.

Seattle, Wash.—The Portland Canal Power Company, Dexter-Horton Building, Seattle, Willis T. Batchellar, president, has surveys under way for a new hydroelectric generating plant in Alaska, and it is said that a portion of the power output of the proposed station will be used for paper mill service in that territory. A site has been secured on the Alaska side of the Portland Canal, about 12 miles from Hyder, Alaska. A power tunnel will be constructed 800 feet long, with steel penstocks providing an additional 400 feet for water head. The station will be equipped for an initial capacity of about 10,000 horsepower, and which will be increased to 20,000 horsepower at a later date. The entire development is estimated to cost in excess of $2,000,000, with transmission system.

Abitibi Canyon, Ont.—The Abitibi Power and Paper Company, Toronto, Ont., through its subsidiary organization, the Ontario Power Service Corporation, Ltd., has awarded a general contract to the Dominion Construction Company, Reford Building, Toronto, for the construction of a new hydroelectric generating plant in the Abitibi Canyon, Province of Ontario. Work will be placed under way at once and the initial unit of the new plant is expected to be ready for service in about 24 months. The plant will have a total rating of 275,000 horsepower, and is estimated to cost in excess of $15,000,000 with transmission system. The majority of the output will be used for paper mill and industrial service.

Montreal, Que.—The Shawinigan Water and Power Company, Montreal, has active work in progress on a new hydroelectric power project on the St. Maurice River at Rapides Blanc and Rapides Des Coeurs, representing a stretch of about 70 miles on the upper part of the stream, in the vicinity of the town of La Tuque. This is part of a development which will comprise six power dams to develop a total generating capacity of 300,000 horsepower over a period of years, representing an investment of close to $100,000,000. A considerable portion of the power will be utilized for paper mill service. It is expected that about 100,000 horsepower of the total noted will be available during 1933. The company has agreed to pay the Quebec Streams Commission an annual rental of 25,000 horsepower, plus a sum of $1.00 per horsepower generated.

Portland, Ore.—The F. C. Stettler Manufacturing Company, 300 Oregon street, manufacturer of folding paper boxes and containers, is said to have plans in preparation for the rebuilding of the portion of its multi-story plant recently destroyed by fire, with loss reported over $500,000, including machinery. It is understood that bids will be asked on general contract at an early date. The rebuilding is expected to cost close to the amount of the fire loss.

Niagara Falls, N. Y.—Following recent acquisition of the abrasive division of the American Glue Company, 121 Beverly street, Boston, Mass., by the Carborundum Company, Niagara Falls, the last noted organization has formed a new subsidiary under the name of the Union Sand Paper Division of the Carborundum Company, to take over and operate the property. The Union plant at East Walpole, Mass., included in the purchase, will be continued as heretofore, as well as the branch plant at Brantford, Ont., and it is understood that improvements will be carried out and increased capacity arranged in the future. The main office of the Union Sand Paper Division will be located at 121 Beverly street, Boston.

Cloquet, Minn.—The Northwest Paper Company, Cloquet, is awarding miscellaneous sub-contracts in connection with its mill expansion program, previously announced, consisting of a main one-story production unit, 125 x 725 feet, brick and steel type. A contract for roofing and sheet metal work has been let to the Walker-Jamar Company, South First Avenue, Duluth, Minn.; and award for millwork to the Scott-Graff Company, 2402 West Michigan street, Duluth. General contract is being carried out by the James Leck Company, 211 South Eleventh street, Minneapolis, Minn. The Jacobson Engineering Company, Plymouth Building, Minneapolis, is engineer for the project.

New Companies, Etc.

New York, N. Y.—The Paper & Pulp Factors, Inc., have been incorporated with a capital of 200 shares of stock, no par value, to manufacture paper and paper products. Raymond R. McGee, 505 Fifth Avenue, New York, is one of the incorporators and representative.

Marion, Ind.—Officials of the Marion Paper Box Company, Marion, have filed notice of reorganization of the company with a capital of $75,000, to manufacture and deal in paper boxes of all kinds, including plain and fancy stocks. The directors of the reorganized company are Clark L. Siebold, Merrell D. Coffin, and M. L. Wall, all of Marion.

Brooklyn, N. Y.—The Liberty Paper Box Company has been organized with a capital of $10,000, to manufacture and deal in paper boxes and containers. The company is represented by H. Golin, 2 Lafayette street, New York, attorney.

Michigan City, Ind.—The Breskin Wall Paper Company, Inc., Michigan City, has been formed with a capital of $15,000, to deal in wall paper and kindred products. The incorporators are Charles Breskin, Roger Walziel and Leo F. Miller, all of Michigan City.

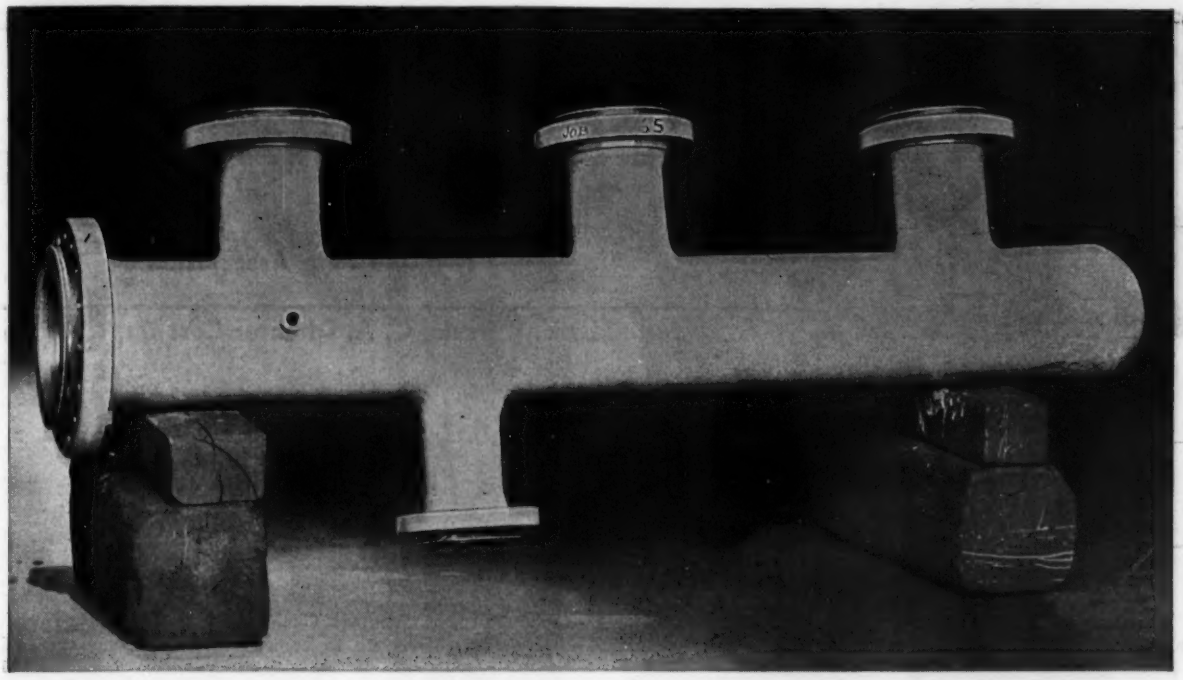
Niagara-Hudson to Construct New Power Plant

[FROM OUR REGULAR CORRESPONDENT]

HADLEY, N. Y., September 6, 1930.—A new dam and power plant is to be constructed here soon by the Niagara-Hudson Power Corporation, according to E. H. Sargent, who said he was certain there would not be any great delay in view of the large assessments annually for the riparian rights on the Hudson River between Conklingville and Luzerne. Mr. Sargent is chief engineer of the Hudson River Regulating Board and recently directed the power project near Sacandaga which is expected to aid paper mills in Northern New York.

It was also learned that the Hudson River Regulating Board contemplates no further immediate construction and work on the site in this section depends entirely upon the action of the power corporation. The proposed plans calls for the construction of a dam on the Sacandaga River while another will diagonally cross the Hudson River to connect with it. It is understood that both will supply the energy for a power plant located at the junction of the two rivers below the dam.

An increase of one hundred per cent in the flow of the Hudson enabling power plants and paper mills in this section to operate at normal during the recent drought resulted from the first practical demonstration of the gigantic reservoir at Conklingville. Engineers declared that except for the release of water from the reservoir many plants along the river would have been forced either to shut down or to have production curtailed.



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Section of the

COST DEPARTMENT

of the

American Paper and Pulp Association

Edited by T. J. Burke C. A. Director Cost Dept.

The Coordination of Cost Records With The General Accounts*

By Thomas L. Evans[1]

The function of all accounting is to render service to business management. This service consists in placing before business executives complete and reliable information of the activities of a particular business, analyzed and presented in such form that the information can be used effectively in controlling the operations and transactions of the business to the end that economies may result and the balance sheet at the end of the accounting period show increased profits through the interpretation and correction of conditions giving rise to danger signals as they appear on the monthly statements throughout the year. The basis for correct cost accounting is proper organization so that through departmentalization, the fixation for responsibilities can be placed. It is the function of the executive department heads and their subordinates in the organization to understand the plan of procedure of the system in use and to see to the smooth working of the details coordinating with it. Without this harmonious organization, no controlling accounts can make a cost plan succeed, as there are so many ramifications of the subsidiary accounts tying up with the completed cost system, through interdepartmental transfers, that do not show in the general accounts.

The larger the business and the more diversified the operating departments, the greater is the need for supervision through accounting control. It is therefore important that reports and statisical information be dispensed to the management that correctly show the various activities of the business. The importance of accounting service is based on true and correct records, through accounting control, to the end that the supporting subsidiary accounts must tie up with the general control accounts.

Every one connected with the accounting and cost accounting divisions of a business should understand the modus-operandi of the system mechanism, otherwise many useless dollars will be spent and will disappear through the lack of understanding of the objects and the purposes to be obtained.

Without proper cost accounting information, the management of any business is at a loss in fixing selling prices, meeting competition, and directing the manufacturing activities. With properly organized cost statistics, the business executive has a definite guide for controlling and directing his business operations. The general cost and manufacturing accounts should be so laid out that they will present first:—Cost of Raw Materials; Second, Cost of Production Labor; Third: Cost of Factory Operating Expenses, i.e., burden or overhead, whatever you may choose to call it. Fourth: Total factory cost of finished product.

If these records are to be useful to the management, they should be broken down into proper supporting details; required detail being recorded in subsidiary record books of accounts and these sub-divided for departmental operations.

Cost of Raw Materials

To better provide for material control, it is essential that the material items be properly classified; and divided into the following classifications:

A—Raw Material items that form the principal basic materials used in the manufacture of the product before any manufacturing operations have been performed within the plant.

B—Supplemental Raw Material items, which are secondary in their importance of which include such items, commonly referred to as Factory Supplies, which are necessary to the manufacture of the product, but which are not apparent, figuratively speaking, in the finished product. These materials, however, must be transferred from stock on requisitions in the same manner as raw material items under (a).

The necessary accounting procedure and methods to properly control the material values, should include the following records:

1—Purchase Requisitions—which originate in the department requiring the material and form a request to the Purchasing Department to place an order for the material required as described.

2—Purchase Orders—used by the Purchasing Department ordering from the supplier, after having first determined the best price and terms, the quantitiy, quality, and kind of material required.

3—Reports of Material Received—which are the reports submitted by the Receiving Department to the purchasing Department showing the quantity, quality, and kind of material received.

4—Invoices from Shippers or Suppliers—The values appearing thereon being supported by the three previous records referred to and which; after having been verified for quantity, price, and terms, are approved for payment by the Purchasing Department from whence they pass to the disbursement auditor for payment. He has in his department duplicate copies of the purchase orders and reports of material received, which he uses as part of his audit to determine the authenticity of the invoices and his confirming authorization for payment, after verification for prices, extensions, terms, etc.

* N. A. C. Bulletin.

[1] Asst. Secy. and Compt., Weston Electrical Instrument Corpn., Newark, N. J.

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"NIROSTA" AND THE INTERLACED TRIANGLES ARE THE TRADE-MARKS FOR HIGH-CHROMIUM NICKEL STEEL ALLOYS PRODUCED UNDER PATENTS OF KRUPP NIROSTA COMPANY, INC.

5—Voucher Record or Purchase Invoice Register—in which record columns are provided for the proper distribution of the various purchases and accounts payable items to readily summarize the charges under the proper accounting control accounts. In some cases it is necessary to sub-divide the voucher register into subsidiary departmental records, depending upon the accounting procedure and the breaking down of the various accounts desired.

To delve further into the breaking down of the sub-divisions of the voucher register is unnecessary at this time, as all of us should be sufficiently familiar in the handling of subsidiary accounts and the necessity for these accounts to pass over everyday details. We shall therefore deal with the major or controlling accounts only.

Voucher Register

While the foregoing explanation has so far touched only on material purchases, the voucher register becomes a book of original entry for the entry of all disbursement vouchers, payable by voucher check and covers checks drawn for payroll, which are charged against an Undistributed Labor account, and expenses of every kind. The only items that should not appear in the voucher register are checks for officers and certain executives salaries, expenditures of a private nature, the information of which should not be passed generally to the various office departments.

The voucher register provides for credit entries in the first four columns and for debit entries in the remaining columns, the number of which can be extended to meet the necessary requirements. I have seen some voucher registers having 60 and more debit columns, which, for convenience, are made up of cut sheets. The total of the first credit column, which is for Accounts Payable items only, is posted to the credit of the Accounts Payable Account, the second column, cash discounts allowed and taken, the third column usually for freight deductions where shipments are made F.O.B. destination and the freight paid at destination. These must be deducted from the invoice at the time of payment, but as ths cost is included in the cost of material, its total value is charged to its proper account. The fourth column is to receive Accounts Receivable, Miscell. Credit accounts, and contra credits, posted singly to the credit of a specific account.

The total of the voucher register debit distribution columns are posted at the end of the month to the General Ledger Control accounts. By individual account markings, either on the office file copy of the voucher or a voucher register account column, postings are made to the various subsidiary accounts. At this point, it might be well to state that posting of the various subsidiary accounts should be made direct from the office file copy of the voucher, rather than from the voucher register, for the reason that more information can be obtained from the office file copy of the voucher and it also forms a positive check when reconciling with the control accounts the trial balance of the subsidiary accounts, which must tie up with the various control accounts.

I personally do not approve of an Accounts Payable Ledger, as it consumes unnecessary time in posting and the details contained in the various creditor's accounts are too meager and indefinite to supply the information usually sought. In other words, it serves only as a voucher record index, whereas if an additional copy of the voucher is provided, these copies can be filed in individual alphabetical books to take the size of the duplicate sheet and when alphabetically and sub-alphabetically filed into these books they supply a finished reference, usually giving the information desired on the face of the voucher copy. Where not complete, the office file copy of the vouchers, to which is attached the invoices or other details filed in numerical order, will supply the information. An additional advantage is a cross reference numerically and alphabetically.

So far we have provided for the purchasing and charging of the material to definite control accounts, assuming that the material has been properly placed in the physical stock rooms kept for the purpose under the supervision of competent stock room-clerks. The modus-operandi of withdrawing material from stock is on a material requisition, whether it be a unit requisition or a requisition calling for one or more items. Personally, I favor the unit requisition and lean strongly toward tabulating machine control for distributing material withdrawn against the various accounts. Where the material classification is extensive and its distribution equally so, which may run into thousands of units, the tabulating machine affords a rapid and correct distribution of this material by condensing, not only the posting to the various stock room accounts, but also giving the necessary subdivision for accounting classification and control.

In every establishment, there are certain materials used more frequently than others. Of these particular materials, were they to be posted individually against the stock room accounts, there might be as many as 100 individual postings in a day, unless the quantities withdrawn were possibly summarized on an adding machine and one total posted. Through the aid of the tabulating printer, all of the detail required is punched on the card and can either appear on the printed sheet from individual cards or in group totals, a summarization of which accumulated throughout the month provides for the total quantity and the total value of withdrawals to be credited to the various stock records accounts and subsidiary control accounts, the summarized total value of which is posted to the credit of the various material control accounts, with corresponding debits to various operating accounts.

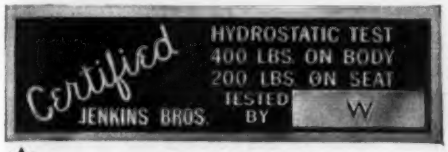
Material Control Accounts in the general ledger furnish from the entries throughout the annual accounting period, a definite inventory value, which should very closely provide the value that the physical inventory at the end of the annual accounting period should show. All of us know the difficulties in reconciling these values, as we find the employees in the shop look upon stock room material as so many pieces, or so much quantity and do not take into consideration that the withdrawing of this material should be as carefully accounted for as the receiving and distribution of cash. Price changes throughout the year also effect the control. However, when price changes of consequence take place, a count should be called for of the physical stock and with the additional stock purchased, a price adjustment should be made on the records in the Cost Department to establish a definite value for costing this material for future withdrawals, which will better stabilize the inventory values with the control accounts.

In every going business, there is a continual change taking place in the product produced to meet business requirements, with the result that certain obsolete and slow moving material remain in stock. This may be the result of improper production methods or lack of foresight on the part of the Sales Department in not supplying the factory with information of the changes in the product taking place. Periodically, a survey should be made of the various accounts in the stock room and where it has been ascertained that material has not moved for a given period, it should be scrapped, the proper material account credited and either an operating expense or Reserve for Obsolete Material account charged.

Work-In-Process

After the material has been withdrawn from the stock to go into manufacture, it becomes Work-in-Process and should be charged to a Work-in-Process account, over which controlling accounts in the general ledger are provided. As the processing of material goes into the finished product, Work-in-Process accounts should be credited and the finished product account charged, the value of which is controlled through the general ledger control accounts. At the end of the annual account period, an inventory is taken of Work-in-Process on the floor, the value of which should closely tie up with the general ledger control account.

It is the costing of these accounts that requires the closest



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**Illustrated above is facsimile of certified brass plate carried by Fig. 326, Jenkins Standard Iron Body Gate Valve, stationary spindle, illustrated at right* ➡

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supervision, the utmost care, clear thinking and the level head of the cost accountant. There are so many interdepartmental transfers and conditions within the plant, that can "upset the apple cart" and cause no end of trouble in reconciling with the control accounts at the end of the accounting period. Cost changes have a definite bearing on the final results and must be closely watched and corrected at once.

While the foregoing is merely scratching the surface on the subject of accounting for material it briefly outlines what is considered necessary and conservative cost accounting practice.

Cost of Production Labor

Manufacturing Labor is usually divided into—

A—Productive or Direct Labor.
B—Non-Productive or Indirect Labor.

A—Productive or Direct Labor deals with that labor which performs work directly on and is visible in the finished product. At times it is rather difficult to distinguish between direct and indirect labor, owing to the nature of the labor performed. For accounting purposes, a standard practice should be prepared to clearly define and distinguish the division as regards an individual industry.

Direct Labor calls for the performance on definite productive orders, for which order numbers have been assigned by the Production Department. As jobs are given out in the Productive Departments, the departmental clerk has prepared in advance the time or labor cards on these individual jobs. As the work is assigned, the time cards are distributed to the various operators with their names, employee numbers (rate of pay, if desired) and description of the job, and the order number assigned to the job. The employee either rings in on the job on a time recorder, or the time is marked on the job card by the departmental clerk when the job is started. The employee rings off at the end of the day, whether or not the job is completed. If uncompleted, a new time card is assigned to him, the foregoing information appearing thereon for the next day's work. For each job performed, a separate time card is provided. The week's time cards, assuming the week's working hours are 48 hours, should total 48 hours. If not, it is up to the departmental clerk to straighten out the error. If these time cards are reconciled each day, there should be no difficulty at the end of the week in reconciling the time cards of each employee with the Time Keeping Department control, as shown by the "In" and "Out" cards for the week.

Where tabulating machines are used, a tabulating machine card should be provided. After the cards reach the Time Keeping Department, they are extended for the labor performed on each job, bonus earned, and any other information that may be necessary. The total of the time cards against the various jobs is compiled through the proper punching of the tabulating machine cards and run through the tabulating machine for distribution. The totals showing against the various order numbers are posted from the tabulating printed list weekly against the order or during the interim, if desired.

The total of the direct labor is charged against the proper work in process account and credited to the Undistributed Labor control account in the general ledger. As the jobs are finished, the cost clerks can readily total the value of the Direct Labor and the hours required to perform the work under the various departments working on the job to be used as a basis for distributing departmental overhead at the established overhead rates.

B—Non-Productive or Indirect Labor is more difficult to account for than Direct Labor, as it runs into so many ramifications and sub-divisions under the various overhead expense accounts.

To properly govern and control the accounting distribution definite expense orders should be issued against which employees, whose work is not charged to direct productive orders, should charge their time. This covers Maintenance Orders, Repair Orders, Foremen's time, Clerical Time, Inspection Time, Inspection (where it cannot be charged directly to the order), Trucking, Janitors, Receiving and Shipping, Drafting Room, (where the labor cannot be charged directly to a Production Order), Lost time waiting for work, Educational Training of employees, Stock Room Labor, both clerical and the handling of physical stock, and so on down the line. All of this Indirect Labor, however, while being charged to definite expense orders, should be sub-divided under departments, so that productive departments will absorb in their overhead the Indirect Labor in their respective departments. General factory overhead, where the Indirect Labor cannot be departmentalized directly to definite productive departments, must be distributed on a pro-rata basis adapted to the respective industry. This subject of general overhead distribution on a pro-rata basis over the productive departments is a subject for a talk in itself. There is no subject in cost accounting that is so elusive or where there are so many different opinions as on the subject of distributing overhead.

As time cards on which the indirect workers report their time are distributed in the Time Keeping Department, the same procedure is gone through on the tabulating machines as on direct labor. The various expense accounts departmentalized are charged and Undistributed Labor account credited.

We now have assembled all of the direct and indirect labor time cards and having credited the distribution to the Undistributed Labor account, this account, for the payroll period covered should balance to the cent, as we have distributed all of the labor, which has been paid for and which, under proper control in the Time Keeping Department, must tie up with the payroll records. Should any difference result, it is up to the Time Keeping Department or the Cost Department controlling the tabulating machines to review the work, locate, and correct the error. However, where labor distribution ties up with a weekly pre-determined payroll control, there should be no necessity for this unnecessary duplication of effort.

Cost of Factory Operating Expense, Burden or Overhead, Accounting for Burden

This elusive and most important element in cost accounting has been more discussed and more volumes have been written upon the technical aspects of its application than any other of the three elements entering into the final manufacturing cost. The deep significance of its importance is not always appreciated, as owing to the amount of value involved in making up the final manufacturing cost of an article, the proper distribution is frequently lost sight of. Mass production forms the basis of modern industry today and the under-absorption or over-absorption of overhead is usually credited to an unforeseen increase or decrease in the business, and is therefore considered uncontrollable. This is a fallacy that should be corrected, as the over-absorption or under-absorption of factory burden in any industry reflects the efficiency under which that industry is managed and the rates determined and established by the Cost Department or Auditor.

Let us assume that in a manufacturing industry $200,000 has been over-absorbed or under-absorbed, where the manufacturing cost of sales, i.e. material, plus labor, plus overhead is $5,000,000 to produce say $10,000,000 in net sales, resulting in a net profit of $2,000,000, after all charges, including depreciation, local taxes, repairs to equipment, selling and administrative expenses, certain miscellaneous direct charges and federal income tax have been deducted, which would be equivalent to 20% profit on net sales. In certain industries this would be considered a normal per cent of net profit under average manufacturing conditions. This over-absorption or under-absorption of overhead is the direct result of incorrect burden or overhead

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rates being used. On a $2,500,000 factory payroll, $200,000 would represent an 8% variation on the total payroll and possibly a 15% or 16% variation on the direct labor payroll on which basis the overhead is distributed, which is greatly in excess of what might be expected.

It is apparent from the foregoing illustration, that a thorough investigation of the departmental rates and the overhead expenses is imperative. Under a budget plan with the various departmental and general expenses pre-determined at the beginning of the accounting period, this analysis is simplified, as the items showing extraordinary increases or decreases, through investigation, can be readjusted. In the case of an over-absorption, it will mean that the rates used have been too high and that inventories are loaded with a higher cost than was actually expended, as a result of which federal income taxes are paid on a paper-profit, which, through readjustment of rates for the subsequent year would result in lessened costs and, possibly to meet competition, reduced sales prices, as a result of which the overcosting of the finished inventory must be absorbed against the actual profit to offset the paper profit taken the year previous.

When making annual comparisons, on statistical and balance sheet reports, such a result calls for needless and lengthy explanation, unless inventory values are corrected to distribute the over-absorption of overhead through a redistribution of overhead loaded throughout the annual accounting period. If credited to the cost of sales for the purpose of merely reducing the cost of sales, the inventory values remain unchanged and will be inflated.

Further, over-absorption and under-absorption of overhead are the most positive indications to management of the shop conditions, especially when a pre-determined budget has been carefully worked out and which in other respects ties up with the general business conditions. Any plan of burden accounting and control should eliminate unnecessary detail and should be as simple as possible to meet the requirements of the business. The real value of overhead absorption is not only to apply the manufacturing burden, as it progresses through the shop, but also to furnish managerial information, from which true comparisons of the actual and expected results can be obtained.

In order to do this, departmentalization of overhead is necessary, preferably on a direct labor payroll or direct working hour basis. Where labor charges in their relation to time consumed maintain an average ratio the direct labor payroll is possibly the simpler method. Against the various departments, the general overhead must be distributed on a scientific basis, which involves floor space, number of employees in the department, the amount of power and electricity consumed and certain other factors incidental to certain industries.

The direct departmental overhead covers the expenses of Indirect Labor and supplies used directly by the department. Overhead is further divided into variable expenses and fixed expenses. The variable expenses are those which relate to the activity of the plant, such as indirect labor, power, etc., while the fixed expenses cover such items as taxes, depreciation, insurance, etc. The general factory overhead expenses should be so distributed that, after having been spread over the various departments, the balance in this account should result in zero. What remaining balance at the end of the month there might be, after following this established plan of distribution, can be pro-rated over the various productive departments on the original basis or can remain in the general overhead expense account as a back log to be worked out during the subsequent months. However, at the end of the year all this expense should be distributed departmentally so that no balance remains.

Overhead or burden absorption rates must first be established on the direct labor covering the direct expense of the department, supplemented by separate rates covering general factory overhead on the direct labor of the respective productive departments, the sum of the two rates making up the total overhead rate through which to absorb the total direct and indirect overhead expenses of the productive departments.

With the addition of the complete departmental overhead or burden to the direct labor applied to the job, the departmental cost of production will result. As the work progresses from department to department, each department will accumulate both direct labor and overhead or burden to the end that when the last process has been performed and the article produced goes into physical stock, the order will show the full material, labor and overhead cost of production, at which value it should be carried on the inventory records.

To establish an overhead or burden control, the various expense items showing in the voucher register will be charged to the proper factory overhead and maintenance expense account covering direct charges showing on the vouchers. Additional charges, depreciation through journal vouchers and other items of an expense nature. At the end of the month, a balance will be struck, which will be offset by the credits resulting from the application of the departmental rates to the direct labor performed in the various departments, the total of which will be credited to an account, "ABSORBED FACTORY OVERHEAD." The credit balance on this account will be balanced against the debit balance of the factory overhead and maintenance expense accounts, the result being either a debit or a credit balance. If a credit balance results, it is indicative of an over-absorption of overhead and if a debit balance, an under-absorption of overhead, which, through properly prepared reports to the management, is indicative of the factory operating conditions in relation to the actual expenditures. The overhead added to the direct labor on the various manufacturing orders for distribution purposes is punched on cards, through which the various orders are charged and a summarization of which forms the credit to the absorbed factory overhead account referred to above. Where tabulating machines are not used, especially designed forms must be used.

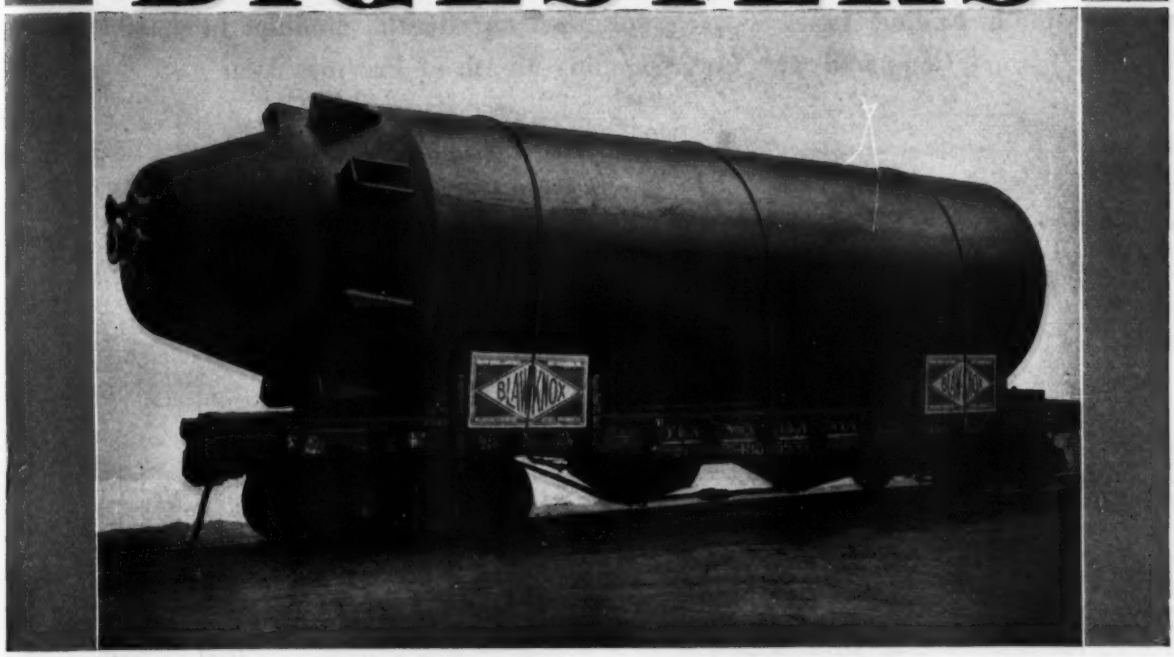
Total Cost of Factory Product

By combining the foregoing three elements of cost, we have the final cost of the finished product, which is the value that must be carried in our inventory control accounts. As sales are made, these sales are costed, using the final cost value carried in the inventories and cost records, the summarization of which costs are credited to finished product and charged to cost of sales on whatever break down the particular industry may require.

Selling and Administrative overhead can either be pro-rated over and added to the cost of sales or charged against the General Profit and Loss account after the gross profit on sales has been determined. Personally, I prefer pro-rating against the various classifications of cost of sales on a quantity basis where advisable so that the net profit resulting from each sales classification can be determined and show the management those sales classifications that are productive of profits and those which are not.

Supplemental to the foregoing control accounts and subsidiary accounts tying up with the control accounts, statistical information should be compiled to be presented to the management, through which comprehensive visualization can be quickly obtained. This statistical information is supplemented to the accounts, the information, however, being obtained from the accounts, and should tie up with the actual general ledger control values. Such statistical information should show the relation of the various elements of cost to sales, compared with a like accounting period of previous years or even sub-divided and compared by months within the same accounting period. The ratio of Selling Expenses and Administrative Expenses to sales should also appear, the ratio of net profits, before deduction for direct charges, federal income taxes and other extraordinary items and finally the ratio of undivided profits transferable to surplus.

DIGESTERS



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BLAW-KNOX

PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

For the Month Ending June 30, and for the Six Months Ending June 30, 1930 as Compared with Corresponding Month of Previous Year

IMPORTS—PAPER

	June				Six Months Ending June 30			
	1929		1930		1929		1930	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
PAPER AND MANUFACTURES	.....	$13,480,291	.....	$8,895,924	.....	$77,305,244	.....	$70,955,355
Printing paper—								
Standard news print ....lbs...free	404,795,776	12,088,582	276,368,866	7,977,242	2,263,431,353	68,470,491	2,144,142,336	62,466,773
Imports from:								
Finland ....lbs.	7,854,244	188,378	5,917,133	137,214	212,800	4,352	.....	.....
Germany ....lbs.	1,356,374	34,673	1,492,640	34,148	29,385,016	709,489	44,713,419	1,032,726
Norway ....lbs.	.....	.....	437,944	10,898	7,922,558	200,266	11,393,558	276,352
Sweden ....lbs.	7,286,993	180,901	9,260,639	231,071	4,520,141	112,919	7,678,015	183,178
Canada ....lbs.	371,807,671	11,222,400	230,101,779	6,736,253	45,483,058	1,158,906	70,803,524	1,751,366
Newfoundland and Labrador ....lbs.	16,277,694	457,878	29,158,731	827,658	2,095,498,919	64,024,836	1,911,396,109	56,427,564
Other countries ....lbs.	212,800	4,352	.....	.....	80,408,861	2,259,723	98,157,711	2,795,587
All other, n. e. s. ....lbs...dut.	493,065	24,588	97,517	5,901	2,229,853	104,420	1,298,166	62,318
Greaseproof and waterproof papers....lbs...dut.	110,028	25,299	51,737	13,665	696,145	145,745	721,356	241,595
Kraft wrapping paper ....lbs...dut.	883,690	37,501	388,784	14,482	4,611,224	197,362	4,267,197	170,474
Other wrapping paper ....lbs...dut.	555,717	11,239	165,010	9,009	3,644,791	103,546	1,239,910	70,217
Writing, letter, drawing, etc., papers..lbs...dut.	311,587	75,668	278,378	59,995	1,577,690	393,886	1,901,909	477,066
Surface-coated paper ....lbs...dut.	216,758	87,921	97,138	41,233	1,356,630	567,032	1,063,689	420,406
Tissue, copying, etc., papers....lbs...dut.	409,809	217,517	136,326	95,283	2,222,237	1,188,902	2,056,030	1,130,184
Paper boards, n. e. s.—								
Pulp boards in rolls ....lbs...dut.	5,016,615	108,661	2,629,234	53,103	31,084,632	689,512	25,906,746	594,619
Paper boards, pulp board, and card-board ....lbs...dut.	2,369,978	50,536	587,867	14,611	11,998,399	273,558	7,335,129	178,468
Leather board, test and wall board..lbs...dut.	103,142	5,381	92,455	4,679	861,441	34,069	781,063	39,125
Cigarette paper, cigarette books, and covers ....lbs...dut.	384,961	125,001	908,417	285,259	5,446,322	1,778,636	6,216,833	2,118,842
Hanging paper (wall paper) ....lbs...dut.	106,590	43,933	67,083	22,504	1,342,367	384,779	1,375,914	383,863
Duplex decalcomania paper, not printed lbs...free	71,693	17,164	45,474	10,812	358,166	91,216	262,624	62,428
Paper boxes ....dut.	.....	182,210	.....	92,281	.....	828,239	.....	678,268
Pulp or papier-mâché and manufactures, n. e. s. ....dut.	.....	42,364	.....	35,300	.....	292,240	.....	303,546
All other paper and manufactures....dut.	.....	336,726	.....	160,565	.....	1,761,611	.....	1,557,163

WOOD PULP

Mechanically ground wood pulp....tons..free	21,441	539,836	10,425	277,439	111,528	2,826,597	128,866	3,595,323
Sulphite wood pulp ....tons	93,600	5,514,777	55,901	3,136,136	493,860	29,010,049	476,310	27,798,485
Unbleached ....tons..free	63,795	3,213,813	39,343	1,951,630	325,833	16,301,364	322,397	16,555,167
Bleached ....tons..free	29,805	2,300,964	16,558	1,184,506	168,027	12,708,685	153,913	11,243,318
Imports from:								
Finland ....tons	10,733	542,002	7,020	350,367	57,069	2,702,482	48,081	2,434,956
Germany ....tons	4,283	308,064	1,699	113,574	31,604	2,201,573	33,190	2,239,865
Norway ....tons	6,372	475,450	5,392	333,430	30,238	2,059,151	33,429	2,145,149
Sweden ....tons	40,649	2,209,012	21,841	1,203,201	181,758	10,068,828	176,204	9,683,073
Canada ....tons	30,156	1,897,878	19,323	1,105,855	181,114	11,325,062	177,400	10,869,776
Other countries ....tons	1,407	82,371	626	29,709	12,077	652,953	8,006	425,666
Sulphate wood pulp, unbleached (kraft pulp) ....tons..free	41,881	2,206,481	18,164	916,534	167,041	9,173,410	166,447	8,410,246
Imports from:								
Finland ....tons	1,433	68,354	2,598	114,874	12,315	581,567	20,535	933,266
Norway ....tons	1,424	64,955	300	14,079	7,664	411,058	6,409	305,194
Sweden ....tons	30,723	1,568,869	11,797	584,180	89,396	4,618,595	98,979	4,749,339
Canada ....tons	8,100	494,976	3,420	201,107	54,566	3,417,167	37,652	2,294,983
Other countries ....tons	201	9,327	49	2,294	3,100	145,023	2,872	127,464
Sulphate wood pulp, bleached....tons..free	1,980	163,260	1,583	89,631	8,074	600,844	7,020	536,859
Other pulp ....tons..free	442	38,202	260	18,370	2,916	232,999	2,166	157,301

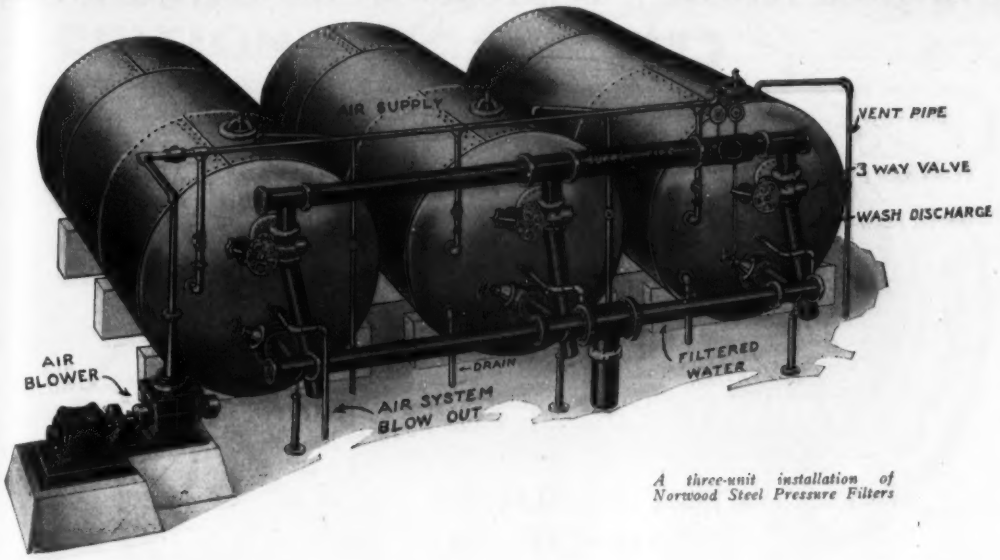
CRUDE PAPER STOCK

Rags for paper stock....lbs...free	41,063,836	862,963	14,728,189	298,409	211,729,844	4,268,358	180,516,279	3,777,923
Waste bagging, waste paper, etc. ....lbs...free	14,478,718	172,979	5,838,305	60,725	71,927,199	872,122	57,388,866	658,403
Old rope and all other paper stock....lbs...free	12,082,225	355,338	10,634,721	90,078	56,663,381	1,716,753	68,231,310	1,187,805

CHEMICALS AND OTHER PAPER MAKERS' MATERIALS

Colors, dyes, stains, color acids, and color bases, n. e. s....lbs...dut.	513,037	569,303	279,796	254,816	4,177,109	4,782,463	2,514,135	2,664,564
Imports from:								
Belgium ....lbs.	4,187	5,676	3,967	6,934	29,863	38,330	28,510	35,075
France ....lbs.	2,090	1,700	23	19	63,381	87,456	13,551	17,816
Germany ....lbs.	335,544	338,226	222,766	200,142	2,965,593	3,303,580	1,577,002	1,664,744
Italy ....lbs.	1,074	415	132	115	5,035	4,613	132	115
Switzerland ....lbs.	165,573	216,812	46,870	41,557	1,035,862	1,260,827	834,716	891,107
United Kingdom ....lbs.	2,129	3,174	5,291	4,617	43,541	49,999	37,187	35,990
Other countries ....lbs.	2,438	3,300	747	1,432	33,834	37,658	23,037	19,717
Casein or lactarene....lbs...dut.	2,138,101	263,796	393,062	37,460	18,262,719	2,180,618	16,062,695	1,783,047
Kaolin, china, and paper clay ....tons..dut.	24,645	263,405	15,942	153,642	137,751	1,494,930	128,496	1,346,690

(Continued on page 58)



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PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

(Continued from page 56)

EXPORTS—PAPER

	June 1929 Quantity	June 1929 Value	June 1930 Quantity	June 1930 Value	Six Months Ending June 30 1929 Quantity	Six Months Ending June 30 1929 Value	Six Months Ending June 30 1930 Quantity	Six Months Ending June 30 1930 Value
PAPER AND MANUFACTURES	.....	$2,917,486	.....	$2,483,664	.....	$18,830,267	.....	$16,722,889
Printing paper—								
News print paper ..... lbs.	2,739,306	110,509	1,915,963	79,160	17,030,798	630,743	12,186,350	499,318
Exports to:								
Europe ..... lbs.	79,132	5,795	184,921	9,539	283,776	17,313	970,094	54,387
Canada ..... lbs.	22,092	1,543	.....	.....	437,478	20,446	19,245	843
Central America ..... lbs.	102,362	3,509	148,090	5,498	363,295	20,117	873,383	31,712
Cuba ..... lbs.	386,503	14,428	355,817	16,587	1,754,671	63,290	1,753,271	72,449
South America ..... lbs.	664,908	27,556	278,016	10,240	4,589,236	169,716	2,812,161	94,459
China, Hong Kong, and Kwantung ... lbs.	329,024	11,439	241,514	13,525	3,295,716	111,136	1,735,402	98,653
Philippine Islands ..... lbs.	861,504	32,642	665,230	21,988	5,226,150	108,386	3,491,456	122,901
Other countries ..... lbs.	293,781	13,597	42,375	1,783	880,476	40,339	531,338	23,914
Book paper, not coated ..... lbs.	2,380,024	176,810	2,554,667	199,497	19,045,731	1,337,215	19,606,243	1,325,841
Exports to:								
Europe ..... lbs.	80,141	5,903	68,690	4,906	999,045	82,061	388,984	35,393
Canada ..... lbs.	837,852	52,146	653,509	58,543	6,558,985	398,135	5,479,333	341,847
Mexico ..... lbs.	99,454	8,173	75,089	9,823	303,493	31,064	402,508	43,717
Cuba ..... lbs.	428,271	31,805	348,039	24,531	2,476,829	174,335	2,354,819	162,005
Argentina ..... lbs.	23,823	2,127	159,740	10,970	1,364,023	107,132	803,607	59,345
Other South America ..... lbs.	127,813	9,394	230,951	18,921	666,212	55,974	1,052,069	81,802
China, Hong Kong, and Kwantung ... lbs.	293,770	17,745	460,306	29,832	3,052,077	183,862	4,518,747	277,750
Philippine Islands ..... lbs.	153,986	10,545	216,489	18,242	2,116,843	139,931	2,392,726	154,494
Australia ..... lbs.	169,978	23,486	65,766	4,864	688,512	93,533	558,199	42,886
Other countries ..... lbs.	164,936	15,486	276,088	18,865	819,712	71,188	1,655,251	126,602
Cover paper ..... lbs.	174,974	27,885	207,445	31,132	1,024,949	174,557	1,246,281	199,740
Greaseproof and waterproof paper ..... lbs.	179,730	33,619	291,422	66,171	1,369,279	253,356	1,697,210	334,942
Overissue and old newspapers ..... lbs.	16,085,074	174,445	13,000,288	104,793	70,711,160	802,791	83,871,934	717,217
Wrapping paper ..... lbs.	3,211,566	230,455	3,100,821	214,922	21,498,097	1,482,943	23,540,462	1,504,281
Surface-coated paper ..... lbs.	1,004,402	98,878	629,540	66,394	9,378,719	848,101	4,977,410	543,386
Tissue and crêpe paper ..... lbs.	370,122	80,407	221,257	52,634	2,189,460	476,192	2,563,931	481,250
Toilet paper ..... lbs.	470,341	52,173	806,284	82,873	3,571,514	403,161	3,952,701	430,130
Paper towels and napkins ..... lbs.	285,519	34,338	304,850	31,736	1,680,915	198,461	2,053,831	232,577
Box board, paper board, and straw board .. lbs.	5,890,507	158,436	6,385,728	159,634	27,566,881	733,098	35,465,998	870,799
Bristols, and bristol board ..... lbs.	241,337	20,796	155,118	15,938	1,587,897	150,569	1,208,475	113,374
Other paper board ..... lbs.	3,496,890	168,814	2,644,836	117,848	20,724,793	986,788	19,600,932	941,163
Sheathing and building paper ..... lbs.	2,084,925	70,157	1,936,083	57,093	12,414,258	426,944	10,213,102	359,375
Fiber insulating lath or board ..... sq. ft.	2,723,864	84,677	6,612,094	198,511	11,348,840	369,009	34,801,026	1,101,115
Wall board or paper or pulp ..... sq. ft.	5,590,758	184,712	1,874,959	60,344	32,756,982	1,071,240	15,617,543	505,061
Blotting paper ..... lbs.	281,568	31,418	252,787	29,627	1,942,566	223,906	1,676,814	197,246
Filing folders, index cards, and other office forms ..... lbs.	108,108	43,968	117,614	50,714	818,652	302,198	843,071	325,025
Papeteries (fancy writing paper) ..... lbs.	49,571	17,937	69,312	13,260	312,028	84,990	318,691	67,293
Other writing paper ..... lbs.	1,955,710	220,218	2,274,738	180,746	14,941,743	1,578,562	11,913,252	1,186,961
Paper hangings (wall paper) ..... rolls	.....	26,476	74,354	14,607	.....	399,066	2,064,941	317,854
Paper bags ..... lbs.	1,099,333	86,091	851,261	66,350	5,694,276	502,067	4,820,647	414,364
Boxes and cartons ..... lbs.	2,234,173	161,316	1,596,169	112,363	15,157,384	972,034	12,676,755	733,007
Envelopes ..... lbs.	199,050	34,468	159,237	27,510	1,226,637	211,068	1,216,897	199,286
Vulcanized fiber sheets, strips, rods, and tubes ..... lbs.	425,579	97,605	344,547	86,995	2,234,249	800,080	2,407,631	596,012
Cash-register and adding-machine paper ..... lbs.	421,011	41,677	470,791	40,137	2,453,451	240,961	2,904,770	258,452
Other paper and paper products ..... lbs.	.....	449,201	.....	322,675	.....	3,170,167	.....	2,267,820
WOOD PULP AND PAPER STOCK								
Sulphite wood pulp ..... tons	2,760	149,959	3,723	202,796	22,926	1,185,455	16,849	930,963
Soda wood pulp ..... tons	97	7,671	74	5,600	949	76,031	1,413	109,336
Other wood pulp ..... tons	331	24,582	171	10,407	3,229	219,108	4,370	179,167
Rags and other paper stock ..... lbs.	6,999,598	121,030	4,056,081	61,757	60,456,951	1,131,506	31,415,484	479,151
PAPER AND PULP MILL MACHINERY								
Paper and pulp mill machinery	.....	370,830	.....	362,179	.....	1,608,082	.....	1,597,845

A. P. W. Had Record Half Year

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., September 6, 1930.—The A. P. W. Paper Company has issued a statement showing its gross earnings for the half yearly period ending June 30, 1930 to be $2,100,516 which surpasses all previous marks for that length of time. It was announced that July sales were a trifle below last years while the August mark established this year was the largest ever recorded. The company is now concentrating in developing various new uses for its products in anticipation of the new advertising campaign which it expects to launch this fall while plans are also going forward towards doubling the production. The control of the firm was recently acquired by the Babson interests to combine with certain others in which they are interested and it has shown rapid development since that time. The company is now regarded as the largest manufacturer of interfolded towels in the country.

Pulpwood for Racquette River

[FROM OUR REGULAR CORRESPONDENT]

POTSDAM, N. Y., September 6, 1930.—Early reports from several Adirondack districts indicate a resumption of logging operations on a large scale early this fall. Operations now in progress near the Racquette River insures a drive next year to the mills of the Racquette River Paper Company which has already placed contracts.

The Sisson-White Lumber Corporation has been employing 175 lumberjacks in cutting approximately 16,000 feet of pulpwood which is to be skidded and drawn to the Racquette River next winter. The skidding probably will take place in November after which the camps will be closed until there is sufficient snow to start hauling. According to reports, the lumber company has received contracts to carry on extensive operations during the fall which includes the cutting of a million feet of pulp wood a few miles from Tupper Lake.

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LOCKWOOD'S DIRECTORY

of the

PAPER & ALLIED TRADES

CORRECTED UP-TO-DATE

The 55th Consecutive Annual Edition

THE OLDEST INDUSTRIAL DIRECTORY IN THE UNITED STATES

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NATIONAL POWER SHOW

Preliminary details of the Ninth National Exposition of Power and Mechanical Engineering to be held December 1 to 6, in Grand Palace, New York City, are well under way. It has been stated by the committee in charge that already the problem of finding space to fit in new exhibitors who are planning to come in, is a real one; and the Grand Central Palace will be crowded.

Business conditions in general are such as to make a show at this time of more than usual value. In the first place a larger attendance than ever is expected because the average executive feels the need for keeping up to the minute in all methods of economy in these times and on the other hand business is not rushing at a pace to keep the important persons in the larger organizations too busy to attend.

That power is the source of all wealth in the final analysis is a fact that the manufacturer who is turning it into the products that we use daily realizes and he is realizing it more and more intelligently each year, as the economies that have been effected by those who have equipment to sell has been translated into dividends for such manufacturing concerns as have been keen enough to adopt new devices and improved methods.

When the first Power Show opened its doors nine years ago for instance the use of pulverized coal was in its infancy and the field was divided in opinion relative to its use. Yet today we learn that in the electric and public utility plants of this country alone there is being burned each year 7,112,739 tons of coal in pulverized form in those queer devices that were first shown at the first and subsequent National Power shows gathering crowds around the booths where the equipment was looked upon as a curiosity in 1921. The six days wonder is over and equipment that was a real "show" in itself in 1921 is an old story today. When the first Exhibit was held high pressures were spoken of, yes of course we used to have tall buildings, at least sixteen to twenty stories high, but today we have 70 and 85 story buildings which are in a measure made possible by the accomplishments of the men who make the National Power Show the great interesting event that it is each year and so we have also instead of 300 to 400 pounds pressure on the modern boiler 1400 pounds pressure. These things were unheard of a few years ago and had it not been for the meetings of the American Society of Mechanical Engineers held to discuss the advances each year in December and the visualization of the former discussions presented each year as commercial units at the Power Show the probabilities are that some of the exhibits at least would not be as indicative of the success of the power industry as there would not have been the opportunity to show quickly and simply "how it works."

Showing how it works is the most trying task of the manufacturer of heavy equipment and the power show solves his problem.

The forty-two million tons of coal each year burned in the power plants of the public utilities in this country must have some approved mechanical means of being turned into power and all of the stoking devices will be shown at the show. The underfeed stokers that burn over 20,000,000 tons a year will be shown with chain grates that are responsible for the consumption of 12,000,000 tons, and in this connection it is interesting to note that of all the coal burned in the public utility field, forty-two million tons, that only nine hundred and seventy-three thousand tons are burned by hand fired methods or open grates. This was not true some few years ago.

Mechanical engineering is moving ahead so fast in America that it is never possible to forecast the new devices that will appear within the span of a year. Many manufacturers have taken advantage of the lull of past months to develop new devices and improvements on old ones that will be shown for the first time at the Power Show this year.

The first day of December marks the opening of the Exposition which will remain open for inspection the entire week to December 6. Indicative of the wide interest that is shown in this annual event, it is interesting to note that every state in the union was represented on the visitors list of those signing at the door last year.

The growth in interest in this field is indicated when we look back and see that there were only 105 exhibitors at the first show but that at this time with the show for 1930 several months away already more than four hundred have taken space and are actively planning to make this the best year that the National Power Show has had. Since the National Power Show will not be held in 1931 this forthcoming Exposition will draw better exhibits and a record attendance of visitors.

RESEARCH ON LITHOGRAPHIC PAPERS

Joint research by the Lithographic Technical Foundation and the Bureau of Standards has been started for the purpose of standardizing lithographic papers. While the Lithographic Technical Foundation has made considerable progress in technical studies related to lithographic printing, the bureau's assistance was requested in this branch of research as they lacked the facilities for the fundamental studies of paper qualities required.

Mechanical development in the lithographic printing industry has been very rapid in recent years. One of the outstanding developments is the offset process which permits production of

high-grade printing at greatly increased speeds. Lack of knowledge, however, of the characteristics required in papers to suit them to high-speed printing processes of this kind, has prevented full realization of the economies made possible by them. Some of the difficulties, which cause losses in both production and materials, are misregister of printing due to distortion of paper, non-uniformity of ink reception by the paper, and deterioration of printing plates caused by chemically or physically active substances in the paper. While such difficulties are not always the fault of the paper, a thorough study of the relation of paper characteristics to the various printing operations should lead to a better understanding of the particular characteristics required in the papers to obtain optimum printing results.

A committee representative of the lithographic printers and manufacturers of lithographic printing supplies has been formed to assist in the work in an advisory capacity.

A. P. W. Plans Greater Distribution

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., September 8, 1930—Roger W. Bell, general manager of the A. P. W. Paper Company, manufacturer of paper towels, toilet tissue and other hygienic products, at Albany, N. Y., has sent a special report to A. P. W. distributors, jobbers, retailers and salesmen. About four months ago the Babson interests assumed control of the A. P. W. Paper Company. The concern has been making a thorough study of the business and its management, especially the Nova Scotia end. The company has been put in a strong financial condition, free from all bank loans and with ample cash reserves. Mr. Stumpf has been placed in charge of distribution. With the recent sale to Kidder, Peabody & Co. *et al* of the new 25-year convertible notes, the company can devote its entire energies to production, advertising and sales. The production division of the business is still under the direction of Seth Wheeler, Jr., president.

The company is to sell the chain stores certain items which it does not expect those to whom the report is addressed to handle. The report says that the "great interest which Mr. Babson and his associates have in helping the jobbers and independents was one reason why they purchased their large interest in the A. P. W. Paper Company. They wanted a company closely allied with the future of the jobbers and independents in order to demonstrate the need thereof and the service which they render."

The company is starting an "A. P. W." advertising campaign in newspapers of 31 cities with intention of carrying it on consistently and indefinitely without interruption.

Bryant Paper Co. Installs New Paper Machine

The Bryant Paper Company at Kalamazoo, Mich. recently installed and placed in operation a 136 inch J. H. Horne rebuilt Fourdrinier paper machine, designed to operate from 200 to 600 ft. per minute. This machine includes a Beloit couch, three main presses, two independent dryer sections, two calender stacks and a uniform speed reel.

The paper machine was placed in operation in record time, commercial paper being made a few hours after stock was first placed on the wire. Since the installation the equipment has been performing with a high degree of success.

The paper machine is equipped with the most modern type sectional electric drive, supplied by the Westinghouse Electric and Manufacturing Company. The sectional drive is equipped with the latest type of Westinghouse carbon pile voltage and section speed regulators. It is also provided with the Westinghouse system of starting generator control.

Canada's Paper Exports Increase

Canada's exports of pulp and paper in July amounted to $14,908,286, according to a report issued by the Canadian Pulp and Paper Association. As compared with the previous month there was an increase of $44,563 although the figures were down as compared with July 1929.

Wood-pulp exports for the month were valued at $2,988,267 and exports of paper at $11,920,019 as against $3,208,864 and $11,654,859 respectively in the month of June.

Exports of the various grades of pulp and paper were as follows:

	July, 1930		July, 1929	
PULP:	Tons	$	Tons	$
Mechanical	13,898	374,311	15,579	435,989
Sulphite bleached	18,470	1,318,097	16,479	1,270,063
Sulphite unbleached	17,351	852,073	15,589	763,710
Sulphate	5,712	345,689	10,314	602,891
Screenings	2,281	41,427	2,734	54,639
All other	758	56,670	.....	.....
	58,470	2,988,267	60,695	3,127,292
PAPER:				
News print	199,060	11,579,862	199,692	11,795,510
Wrapping	923	96,791	1,013	108,330
Book (cwts.)	3,265	29,243	5,956	51,030
Writing (cwts.)	.....	.....	20	743
All other	.....	214,123	.....	301,426
	.....	11,920,019	.....	12,257,039

For the first seven months of the current year, the exports of pulp and paper were valued at $106,416,853 as compared with a total of $112,584,311 in the corresponding months of 1929. This represents a decrease of $6,167,458 or 5½ per cent which in view of present conditions is a good showing.

Wood-pulp exports for the seven months were valued at $24,311,977 and exports of paper at $82,104,876 as compared with $24,597,797 and $87,986,514 respectively in the first seven months of 1929.

Details for the various grades are given below:

	Seven Months, 1930		Seven Months, 1929	
PULP:	Tons	$	Tons	$
Mechanical	105,382	3,055,506	108,832	2,967,472
Sulphite bleached	154,466	11,412,960	147,792	11,278,588
Sulphite unbleached	122,963	6,119,978	107,061	5,309,838
Sulphate	56,444	3,281,991	78,988	4,691,636
All other	17,250	441,542	19,445	350,263
	456,505	24,311,977	462,118	24,597,797
PAPER:				
News print	1,366,664	78,887,825	1,409,993	84,414,737
Wrapping	8,422	884,116	8,728	943,453
Book (cwts.)	24,329	228,004	43,629	372,349
Writing (cwts.)	1,992	17,080	3,114	28,428
All other	.....	2,087,851	.....	2,227,547
	.....	82,104,876	.....	87,986,514

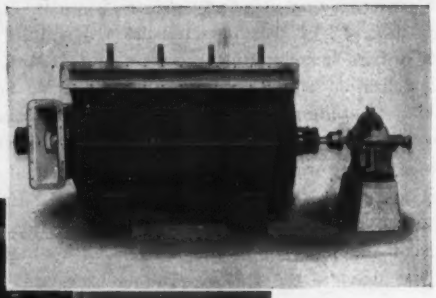
Pulp wood exports have increased somewhat this year, the total shipments for the first seven months being 794,821 cords valued at $7,958,087 as compared with 742,012 cords valued at $7,332,441 exported in the corresponding months of 1929.

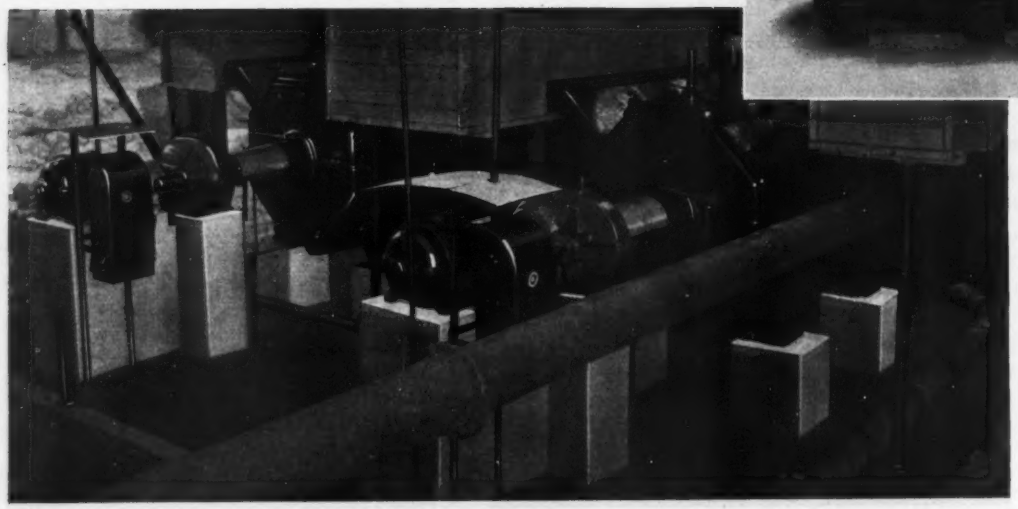
Northeastern Superintendents To Meet

Plans have rapidly progressed for the Annual Meeting of the North Eastern Division of the American Pulp and Paper Mill Superintendent's Association which will be held on September 19 and 20 at the Hotel Balsams, Dixville Notch, N. H.

In conjunction with the regular meeting of the North Eastern Division there will also be held a meeting of the Pulp Section of the North Eastern Division. Among the speakers will be Dr. Adams of the Massachusetts Institute of Technology, who will speak on "Control in Paper Manufacturing," J. K. Merwin, of the Chain Belt Company, Milwaukee, and K. A. Newman of E. F. Houghton & Company, of Philadelphia, who will talk on the subject of "Lubrication."

Several New England paper manufacturers have signified their intention of attending this meeting. Provision has been made for taking care of ladies who will be present, and the committee in charge wishes to announce that all those who would like to attend, members or otherwise, will be heartily welcome.





ONLY ONE PLACE This Rotary Screen Can Earn a Profit

THERE is only ONE place the Valley-Thune Rotary Screen can earn a profit for you.

And that is in YOUR mill.

The success it is achieving in other mills does not add to your income. It merely PROVES and DEMONSTRATES the type of service it is capable of rendering.

Much proof is available. Of first importance is the fact that it is turning out CLEAN pulp—consistently. And second is the generous reduction in operating and maintenance costs it has brought about in each of its 17 installations.

The experimental stages of the Valley-Thune Rotary Screen have passed many months ago. It is a thoroughly tried machine. It has proved itself the most satisfactory and profitable method for screening sulphite and sulphate pulp.

Since an inquiry involves no obligation, why not get the facts, and determine how profitable a service the machine can render in your mill? The Valley Iron Works Co., Appleton, Wisconsin, will be glad to send you full information.

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Canadian Representatives: Pulp & Paper Mill Accessories, Ltd., Montreal, Canada

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

The Foundation for Operation of Modern Management Methods*

By L. C. Reynolds[1]

I am speaking today as chairman of our new Management Methods Committee. This committee came into being because there seemed to be a feeling that the technical work of this organization ought to be coordinated with the other phases of the active management of our industry as represented by production, sales and finance.

The executive committee has defined the activities of this committee as follows: "Production, cost and quality control, operating efficiencies, human relations, finance and sales." Now this covers field enough to permit our doing almost anything. Accordingly, I circularized the members of our committee with a view to gaining an idea of what was foremost in their minds, and first place seems to be given to a desire for standard costs and production control. On the surface, one might wonder what an engineering organization has to do with such a subject, but a careful survey will show that engineering has played so active a part in modern control and cost methods, that engineering training is advisable for working out a successful control application.

Now I desire to review the development of our modern business methods in order to discover the foundation upon which we must rear our modern business structure. We can all look back to a time when, since the beginning of our country, there was a producers' market for manufactured commodities. This meant that the science of industries was neglected and attention given to the art alone. Now science is organized facts and real art is a science practiced. The artisan founded each industry and was not concerned with more than making the product. Our earliest industries, such as textiles and paper, still show the result in that marketing as well as distribution is still left to others outside their organization. A profit was added to the cost and the selling price was the resultant. This may seem amusing now, but I can remember and so can you. Then came mass production. And mass production was here before the world war. In fact, the principles of mass production made possible the magnificent proportions of the world war.

Experience of Automobile Industry

To the invention of the automobile, we owe considerable. The artisan became hopeless in the confusion caused by the consumer demand. Dealers actually stood at the factories in Detroit, with their own drivers, waiting and demanding the next machines produced. The result was an endeavor at mass production. This meant an accurate dovetailing and coordination of the efforts of a thousand human beings each touching a certain part of the resultant product. Many were the anxious hours when executives saw materials and units pile up and go to the rubbish pile because they wouldn't go together; and likewise there were the hours when hundreds of people were idle because of some group not being properly coordinated with the whole organization. Better control was needed, but based on what? Control of quality, of output, and the like, implies that there be a basis for comparison. In other words, there must be a yard stick, by which to measure quality or quantity. This yard stick becomes our *standard* or bogie. The natural result of mass production was *standardization* first within the individual companies and then within the entire industry.

The organization having the major part in standardization for the automobile, was the Society of Automotive Engineers. It is a national organization having headquarters in the Engineering Societies Building in New York and it occupies the same place in the automobile industry that TAPPI does in the paper industry. In fact, to paraphrase their name, we are the Society of Paper Engineers.

In the effort to standardize the processing within the factories, they found it necessary to standardize the raw materials to be used. And starting in first with the steel mills, they succeeded and today their standard specifications have become the standard for stocking of steel within steel mills as well as by all users of metals. Standards were then worked out for interchangeable parts and for use of raw materials as well. The result has been a very active set of committees and considerable interest when each proposed standard was put up for vote of membership. And what is known as "SAE standards and recommended practices" is in loose leaf form and fills two binders, pocket size. The loose leaf permits of prompt revision as well as of additions.

Our own TAPPI is a real active paper organization and has a wonderful record of accomplishments and the work already done could be brought to a most successful fruition through some such method of that used by the SAE. This is a work in which practically every committee can have a hand and would stimulate and focus each committee's work, even though nothing ever got settled.

Now a few words regarding the usual objections entered against standardization in any form.

First there is the question as to just what there is to standardize. Some one says—"It is all right for the other fellow—our business is different—anyway, be specific." To answer this question would be like settling the details before the policy is decided upon. It is sufficient to note that the American Standards Association, a national organization also having its headquarters in the Engineering Societies Building, is in existence for the sole purpose of standardization and the member bodies of the association include practically every national engineering organization except our own. It also includes industrial organizations of a wide variety, even the National Laundryowners Association.

* Presented at fall meeting of TAPPI, Erie, Pa., Sept. 3-5, 1930.

[1] Member TAPPI, comptroller and assistant to president of the American Writing Paper Company, Inc., Holyoke, Mass.

The second objection to overcome is lack of interest in the possibilities. As to the possibilities of standard specifications, we may note that five years ago the U. S. Bureau of Standards listed 27,000 standard specifications used by private firms, trade associations, and technical societies. Also note that one large electrical firm purchases 89 per cent of its items on standard specifications of its own; in other words 41,000 items out of 46,000 items of purchases.

The third objection that might be listed is due to pride of existing traditional practice. Some firm may feel that the quality of existing branded product is superior to the standard specifications or some firm may feel that a certain type, style or brand has captured the market to a considerable extent. There is the fear that a large majority of customers may be satisfied with the standard grade and that consequently the higher grade may not command its accustomed patronage.

The fourth obstacle is the fact that the manufacturer of a product will generally object to any regularization until he has tried it out. It is generally the user who starts standardization and once a user body creates a standard requirement, the market for non-standard products is lessened and the maker must fall into line.

The fifth obstacle is the lack of time on the part of busy men, to devote time from their specific work to anything that is a general promotion of their own industry.

A sixth objection may be the feeling in someone's mind that he is perfectly able to take care of his own business and if everyone else is likewise situated, why not let things alone.

In the seventh place, the vitalizing influence of standard practice does not show itself immediately but gradually and is hard to describe sufficiently ahead of time, such that those who want immediate results can be made satisfied.

The eighth and last objection or obstacle I will list, is the general feeling everywhere that a standard is something rigid, resisting any change whatsoever, hampering progress and stultifying the state of the art. Having no standards would then mean, according to this view, complete freedom of action and progressiveness. This fallacy is best answered by pointing out that standardization does not mean standing still—rigid—but moving together in harmony. No standard should be regarded as the one best solution for all times, and that is why the SAE uses a loose leaf system as previously mentioned.

Use of Standards

Now as to the use to which we would put standards. I stated in the beginning, how important the matter of standard costs and production control seemed to those members I had questioned. Now, standard costs is simply our measuring stick —our bogie—for production control. And a standard cost is made up of three elements, each of which is a standard and impossible without some form of standardization of practice and of materials used. The three elements are material, labor and overhead. If a given paper mill is to have standard costs, it must first standardize its use of materials. Its materials must have each shipment tested and its gradation certified unless it can purchase to a standard specification. If materials can always come to a standard specification the task is easy, otherwise it is a compromise. A standard furnish must be decided upon. We can then figure the standard cost of materials based on correct manufacture.

And as for labor, we must have a standard performance, both for man and machinery. A wage incentive system or a standard payroll and a production volume requirement will create a standard labor cost. But this is not attainable unless the furnish can be always the same for a given grade or kind of paper and back of this is the materials. And then we have the standard overhead. This is a set up of all expenses for full time operation and proportioned to the orders run. This overhead has a lot of factors open to standardization for materials as well as for the individual mill organization.

Now we have only covered one small phase of management methods, and one might look at it as the final fruition of general management methods. However, the starting point today is the sales forecast, backed by statistics and sales quotas and market analyses. But how can such work begin if there is not standardization of product, at least for the given mill in question? Creating grades for the various lines of manufacture enables a classification and a study whereby the forecast can be made and developed into manufacturing quotas. After this has been developed into standard furnishes of standard materials it then develops material quotas for the purchasing through yearly contracts or otherwise. Think of purchases made on such a forecast as compared with those based on what was used last year, which usage may have been right or wrong and may or may not be repeated.

Then we have the matter of inventory control. A great many companies have been wrecked by lack of such control. And it is an account which can be manipulated, written up or written down. It is dangerous, and must be controlled above all others. But we must have all of the standards and quotas aforementioned before we can start an inventory control. There must be ordering quantities based on the time interval as well as quotas and this applies equally to raw materials and supplies as it does to finished paper where the efficient size of production order is involved.

Then as to efficiencies, we are always speaking in comparative terms. What is *most* efficient today may not be so tomorrow. Standards are necessary if we are to measure our efficiency. We have this policy in the boiler room and why not elsewhere.

Then as to quality control, there is the very important factor of standardization of material and practice. Standard means doing the *same* thing the *same* way and of the *same* materials always unless and until a better method or material can be found and made the standard. Repetition makes for uniformity and uniformity makes for quality. And quality can't be measured except by some standard of quality already established.

Now as to finance, one need only suggest that all of the foregoing places the financial executive in a position to ascertain at all times, what capital he needs and what cash balance he will have. And last but foremost is the thing without which we cannot long exist, namely, profits, of which we have more certainty. Profits some day will be a first charge against income instead of a last result. We will then use the formula—Income minus profits equals allowable expense—rather than—Income minus expense equals profit or maybe loss.

Human Relations

There is one more subject mentioned in the opening as being one to be covered by the Management Methods Committee, and that is human relations. Here we have one of the three reasons for the existence of industry. The three I have in mind are as follows:—Management exists—(1) to make profits for the investor—(2) to serve the public with a commodity—and—(3) to provide a livelihood and continuous satisfactory and agreeable working conditions for a body of human beings who in turn create the purchasing power which collectively with other similar bodies are the consuming public.

This last is most important and yet cannot continue if profits are not made. Profits cannot be continuously made today without modern management methods. Furthermore, modern methods are necessary in mass production if we are to have the required coordination of effort so necessary not only for efficiency and for cost and quality control but necessary because human relations improperly coordinated create friction, trouble and shifting of responsibilities until satisfactory working conditions are no longer possible. That is why I have placed personnel effort last, both because it is impracticable if first in a program and also because it follows easier and becomes a natural outcome of coordination and control.

This matter of human relations is one which it is well for

any engineering body to consider, because the engineer and his creation of the labor saving machinery is today blamed for the unemployment which has cut down the purchasing power which is so necessary if his machinery is to keep going. And yet, consider what management methods, as described in the foregoing, has done to stabilize and balance production and thereby cut down unemployment. Seasonal unemployment will be unknown when we can operate our new methods to their full efficiency. Perhaps our modern methods and machinery are not so much to blame for unemployment as a lack of understanding of our newest business tools, which can work to evil if not in understanding hands.

But as one member suggested to me, let us begin at the beginning; and the effort of this address is to point out the beginning as well as the foundation for modern management methods; and I hope that you agree with me that it is *standardization.*

Continuous Vacuum Filters in Closed White Water Systems*

By A. O. Bragg[1]

There are certain criteria by which white water systems and equipment may be judged. Initial cost, while important, is not necessarily decisive. The sewer effluent must satisfy the requirements of the state as to stream pollution. A high degree of clarity is necessary for best operation of the clarified water in the machine showers. The percentage of return on investment is not only of great importance, but its determination involves consideration of pertinent items. Maintenance cost, cost of labor for operation, power consumption, floor space required, simplicity of operation, ruggedness of construction to secure low maintenance, amount and value of stock recovered, dependability of the recovery process. These factors, and others depending on mill conditions, must be weighed carefully before selecting a white water system.

The mill tonnage, amount of white water to be handled, and frequency of color changes also have an important bearing.

In general, where the white water is less than 500 gallons per minute, the need of a saveall of the cheaper type is indicated. The investment necessary for a high efficiency saveall is not warranted financially. From 35 to 40 per cent of the white water can be used in beaters, breaker beaters, decker showers, head boxes, screens, etc. The balance can be treated in a "side-hill," cylinder mould or similar saveall. The effluent, if chlorinated, will be fairly satisfactory for machine showers.

For larger flows than 500 g.p.m., two types high efficiency savealls are available. In such cases, the financial returns are so large that consideration of other than high recovery methods is not financially sound.

Sedimentation Tanks

Sedimentation tanks and continuous vacuum filters are admittedly the most efficient savealls known today. In the latter, continuous recoveries as high as 98 per cent are being made. As the construction and operation of these savealls is quite generally known, these items will not be discussed here. Sedimentation tanks operate successfully on short fiber white water containing clay, and where color changes are infrequent. The settling is then assisted by adherence of clay to the fine fibers.

When color changes are at all frequent, the time required and stock lost in wash-ups more than offsets the gain in operating a sedimentation saveall.

The system must be chlorinated to prevent slime accumulation on the large surfaces submerged. Otherwise, the gases from its decomposition rise to the surface. These carry fibers with them and cause excessive losses in the effluent, as well as interfering with operation of the showers, because the long fiber clogs the shower openings.

Continuous vacuum filters are equally effective on short fiber, clay filled stock. They are far more effective on all other types of stock.

Their action is positive and reliable. The sedimentation process, necessitating a delicate equilibrum between rate of flow and settling tank volume, is "tricky." Therefore, constant attention is necessary, if high stock losses are to be avoided.

The savings effected by use of well clarified white water on machine showers, compared with fresh water, are such that no mill can afford to ignore them. Alum is one item.

A Pacific Coast mill, using a vacuum filter saveall, reports the following: The pH of the fresh water runs 7.9 in the summer and fall to 7.0 or neutral in the winter and spring. For good sizing, enough alum must be added to bring this down to 6.0 on the machine.

With fresh water, 60 pounds of alum were used per ton of paper. Now, with filtrate from the vacuum savealls on their machine showers, only 45 to 50 pounds are necessary. The saving has been found important enough to put a man on each shift for chemical control.

The savings due to increased stock temperature in board machine vats, due to recirculation of clarified white water through the showers, is interesting.

A seven cylinder machine on newsboard has increased its production by 20 to 23 tons per day by recirculation. The temperature of the filler stock, in the vats, runs from 120-130 deg. F. and 110-122 deg. F. in the liner vats. The temperature of the stock at the fifth secondary press roll is 90 to 95 deg. F. The increase in production is due to faster formation obtained by warm stock, more effective pressing and faster drying.

Recirculation Advantages

Some communities dislike the sight of large volumes of red, yellow, green and other colored waters, in their streams. Recirculation minimizes this by reduction of volume wasted. Moreover, there may be a cotton bleachery downstream, which does not look with favor on all the colors of the rainbow.

With the possible exception of all rag bonds, there is not a grade of paper or board in the manufacture of which the use of well clarified white water on the showers will not only bring about substantial stock savings but will improve the quality of the sheet. The fine white water solids improve the density and strength of the sheet. The stock is somewhat slower, which reduces the water drainage necessary from the machine wire. It is well known that, the slower the stock, the less water must be carried in the head box.

The following table gives a true picture of vacuum filter saveall results in paper and board mills.

Grade made by mill	Pounds per 1,000 gallons: White water	Pounds per 1,000 gallons: Filtrate	G.P.M. W.W. to filter	Sweetener stock *: Source	Sweetener stock *: Kind	Thickness of filtering sheet	Mesh face wire
News board	5.4	0.79	1600	Breaker beater	Chip and news	1/8"	60
Container board	4.15	0.80	1100	Filler beaters	Chip and kraft	1/8"	60
Sulphite bond	1.50	0.20	800	Machine chest	Sulphite and 10% clay	1/16"	50
Book	9.33	0.73	900	Machine chest	Book stock	1/16"	60
	9.90	1.63	900				
Kraft	5.28	0.53	585	Machine chest	Kraft	1/8"	60
Tissue	4.00	0.35	600	Machine chest	Tissue stock	1/8"	60

* Presented by title at the fall meeting of TAPPI, Erie, Pa., Sept. 3-5, 1930.

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* Sweetener stock is the stock taken from the beaters or machine chest to build up the consistency of the white water to 20 to 30 pounds per thousand gallons to assist the filtering operation.

Evaluation of Pulpwood *

By Bjarne Johnsen[1] and Charles H. Reese[2]

The principal factors in the evaluation of any fibrous raw material for pulp and paper making are: yield by weight, yield by volume and physical and chemical characteristics of the fibers produced. It is customary to calculate the yield on a weight basis from the determination of cellulose content of the raw material by the Cross and Bevan chlorination method or some modification of it. Chlorination without hydrolysis gives values for cellulose in spruce as high as 60 per cent. When hydrolysis is included in the chlorination method a large percentage of the pentosans and hexosans are removed and the residue represents from 50 to 55 per cent of the weight of the wood. In commercial cooking processes employing high temperatures and pressures the effect of hydrolysis is even greater and the yield of bleached pulp from spruce cooked by the sulphite process is reduced to about 45 to 48 per cent of the weight of the wood.

The difference in percentage yield of pulp obtained in mill operation and the cellulose content of wood as determined by the usual methods is due to the difference in composition of the resulting products, chiefly because of the increased removal of hemi celluloses in commercial operation. Another reason for this variance between results obtained by standard methods of cellulose determination and by mill practice is that in commercial cooking such factors as temperature, pressure and composition of cooking liquor are intentionally varied to produce pulps of different qualities, whereas a definite procdure is followed in determining cellulose in wood.

There is at present no analytical method for cellulose determination which will give values which can be directly translated into yields obtainable in commercial processes. It is important for the manufacturer of pulp and paper to know what yield of a definite quality of pulp can be obtained from a certain raw material, but it is more important for him to know how to adjust the cooking process so as to obtain the best combination of quality and yield from any raw material. A standard method of treatment for every sample will not give this information because of wide variation in wood of the same species, due chiefly to local conditions of growth.

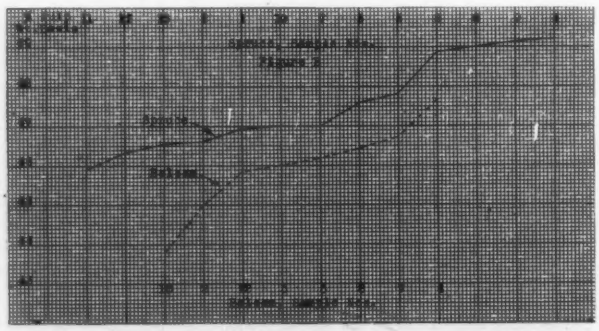


FIG. B.

Spruce and Balsam—Hours required at 130 deg. C. to produce pulp of desired bleach requirement. Yield of Unbleached Pulp on Weight basis.

Another important factor in the evaluation of wood, which is purchased on a volume basis, is the density of a definite volume. This may be determined as specific gravity of the wood, weight of a solid cubic foot of wood, or weight of a cubic foot of chips.

Finally, determination of the physical as well as chemical qualities of the pulp is necessary to evaluate the wood from which it is produced. This information can only be obtained by having available for tests, samples which are considerably larger than residues from cellulose determinations.

By the use of experimental equipment designed to duplicate commercial cooking conditions it is possible to evaluate woods from various sources, and at the same time to obtain information indicating how the process should be modified to compensate for variations in the wood.

Laboratory Tests

In a study recently carried out in the laboratories of the Hammermill Paper Company, samples of spruce and balsam from thirteen sources were compared for the production of easy bleaching sulphite pulp, requiring about 12 per cent of bleach powder. The cooking equipment consists of autoclaves of 5000 cc. capacity, which are lead lined and stream jacketed. Suitable thermometer wells are provided and proper relief lines and indicating pressure gauges are furnished. Cooking liquor with calcium base of the following composition was prepared for every cook, total SO_2 5.55 per cent, combined SO_2 1.00 per cent. Five-eighth inch chips were used and in every case duplicate cooks were made.

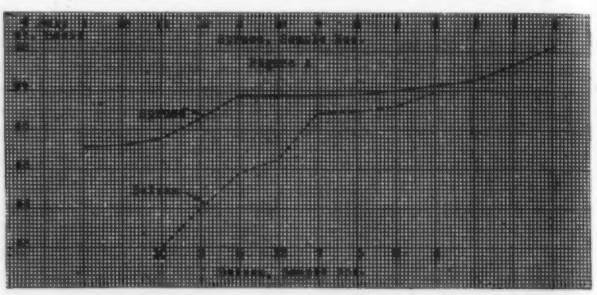


FIG. A.

12 hour Cooks Spruce and Balsam. Yield of Unbleached Pulp on Weight Basis

Woods from various sources were compared by two different cooking methods. In the first series of tests the cooking time was twelve hours and the temperature was gradually increased throughout the entire cooking period. The maximum temperature reached was varied for each sample so as to produce pulp of the desired bleach requirements. In the second series, after penetrating the chips with cooking liquor, the charge was rapidly heated to 130 deg. C. and held at that temperature. The cooking time was varied so as to produce pulp of the desired bleach requirement.

Table 1, 2, 3 and 4 and Figs. A and B contain the information obtained from these cooks. In each tabulation the values are arranged in the order of increasing pulp yield, on basis of weight, obtained from the various samples of wood. The per cent slowness refers to results obtained from tests on pulp beaten under standard conditions for a definite time.

TABLE NO. 1
12 HOUR COOKS—SPRUCE

Sample No.	Pounds per cubic foot bone dry chips	Unbleached pulp yield on weight basis	Per cent screen yield	Maximum temp.	Per cent slow	Bursting strength
1	8.64	45.57	0.74	140	31.0	126
13	11.07	45.6	0.29	140	30.7	124
11	10.3	45.77	0.08	145	27.6	113
12	8.96	46.28	0.44	140	31.7	126
3	9.3	46.83	0.24	135	33.2	133
10	9.86	46.85	0.18	140	29.1	121
7	9.07	46.85	0.43	140	36.8	148
2	9.18	46.87	0.73	135	29.5	136
5	9.33	46.98	0.65	140	29.2	138
6	9.40	47.10	0.38	140	30.7	137
8	9.60	47.25	0.17	140	31.3	133
4	8.88	47.65	0.62	135	33.2	147
9	8.80	48.1	0.21	140	29.0	149

* Presented at the fall meeting of TAPPI, Erie, Pa., Sept. 3-5, 1930.

[1] Member TAPPI, director of laboratories, Hammermill Paper Co., Erie, Pa.

[2] Member TAPPI, research chemist, Hammermill Paper Co., Erie, Pa.

TABLE NO 2

12 HOUR COOKS—BALSAM

Sample No.	Pounds per cubic foot bone dry chips	Unbleached pulp yield on weight basis	Per cent screen yield	Maximum temp.	Per cent slow	Bursting strength
10	7.72	43.0	0.17	145	28.1	109
2	7.3	44.0	0.42	135	31.3	146
5	7.38	44.9	0.43	140	31.3	137
12	7.45	45.25	0.19	140	31.9	134
7	7.99	46.43	0.35	140	30.2	140
3	7.49	46.48	0.42	135	31.4	152
8	7.63	46.6	0.21	135	29.9	157
4	7.8	46.93	0.35	140	32.3	133

TABLE NO. 3

SPRUCE

Hours required at 130 deg. C. to produce pulp of desired bleach requirement.

Sample No.	Pounds per cubic foot bone dry chips	Unbleached pulp yield on weight basis	Per cent screen yield	Number hours at 130 deg. C.	Per cent slow	Bursting strength
11	10.3	45.9	0.02	8	29.3	120
12	8.96	46.35	0.2	7	30.5	133
13	11.07	46.55	0.3	7	31.1	125
2	9.18	46.6	0.22	6	29.9	138
1	8.64	46.95	0.15	7	34.4	148
10	9.86	47.6	0.04	7½	29.3	121
7	9.07	47.0	0.2	6	34.4	147
3	9.30	47.6	0.3	6	33.9	139
5	9.33	47.8	0.05	6	30.9	136
8	9.60	48.85	0.2	6	33.8	139
6	9.40	49.0	0.05	6	31.4	150
9	8.80	49.15	0.1	6	31.8	145
4	8.88	49.2	0.3	6	32.2	147

TABLE NO. 4

BALSAM

Hours required at 130 deg. C. to produce pulp of desired bleach requirement.

Sample No.	Pounds per cubic foot bone dry chips	Unbleached pulp yield on weight basis	Per cent screen yield	Number hours at 130 deg. C.	Per cent slow	Bursting strength
10	7.72	43.8	0.12	8	30.3	121
2	7.3	45.0	0.17	6	29.1	131
12	7.45	45.83	0.16	7	33.9	131
5	7.38	46.04	0.16	6	30.9	150
3	7.49	46.2	0.14	6	32.1	146
8	7.63	46.43	0.04	6	31.2	148
7	7.99	46.75	0.16	6	30.4	147
4	7.8	47.69	0.04	6	33.0	141

These data show the pronounced difference in yields of easy bleaching pulp from various samples of wood. The values obtained by the two methods of cooking are, of course, not in perfect agreement due to different cooking conditions in each case,

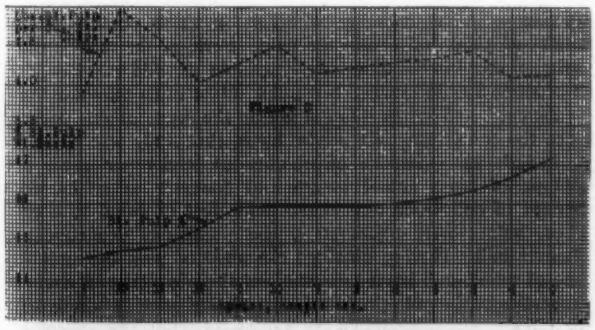


FIG. C.

Spruce—12 hour cooks. Yield of Bleached Pulp on Weight Basis and pounds of Bleached Pulp per Cu. Ft. of Chips.

but a definite relation is evident in both series. In practically all cases the pulp yields obtained in cooks made at 130 deg. C. are higher than yields of pulp from the twelve hour cooks. This is quite natural, as better acid penetration was obtained in the case of cooks made at 130 deg. C. and the lower temperature would favor higher pulp yields.

In another series of tests made in this laboratory, the actual loss in bleaching was determined for numerous samples of pulp which had been cooked at several different maximum temperatures. The bleach requirement of these pulps was the same as for the pulps in the investigation, the results of which are now being presented. The actual loss in bleaching was very close to 2 per cent of th weight of the unbleached pulp—therefore, the bleached pulp yields, as given in Table No. 5, have been calculated from this known factor. For certain purposes it is important to know the alpha cellulose content of a pulp. This value was not determined in the present investigation as it was not considered to be essential. The large variation in alpha cellulose content of various pulps is due to different methods of preparation and not to the alpha cellulose content of the wood. In the investigation to which reference has been made, pulps of different qualities were prepared from the same sample of wood. The alpha cellulose content based on the weight of wood varied from 36.0 to 40.7 per cent, but for pulp of the quality prepared in the present investigation the alpha cellulose content was between 39.5 and 40.5. This value is in fair agreement with

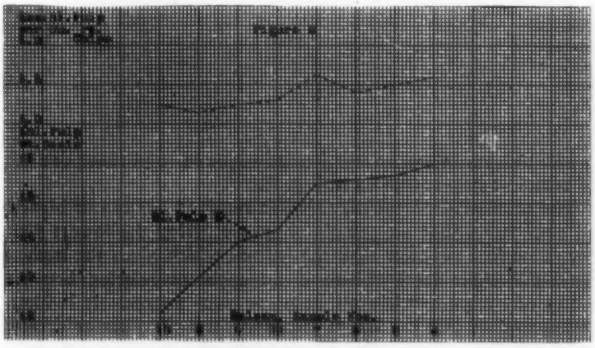


FIG. D.

Balsam—12 hour cooks. Yield of Bleached Pulp on Weight Basis and Pounds of Bleached Pulp per Cu. Ft. of Chips.

Hägglund's (Papier Fabr. 27, 49, 54—1929) determination which was 42 per cent of highly resistant cellulose in spruce wood.

The values given in Table No. 6 are plotted in Figure D.

In Tables 5 and 6 and Figs. C and D are given the yields of bleached pulp on the basis of weight. Pounds of bleached pulp per cubic foot of chips are also given. It is seen that the values obtained on a volume basis are entirely different than the values on a weight basis, which emphasizes the importance of determining specific gravity of the wood. In all cases when the yields are determined on a volume basis, the yields for spruce are higher than for balsam. Even the highest yield for balsam is lower than the lowest yield for spruce, whereas, when yields are determined on weight basis, the pulp yields for certain balsam samples are higher than the yields of some spruce samples.

Another method of plotting the yield of pulp for a definite volume of wood is to calcuate the amount of wood required for the production of one ton of bleached pulp. The weight of one cubic foot of solid wood is obtained by dividing the weight of a cubic foot of chips by .385. Table No. 7 contains the calculations on this basis and the results are plotted in Fig. E.

TABLE NO. 5

SPRUCE—12 HOUR COOKS

Yield of bleached pulp on weight basis and pounds of bleached pulp per cubic foot of chips.

Sample No.	Weight per cubic foot of bone dry chips	Per cent bleached pulp yield on basis weight	Pounds bleached pulp per cubic foot of chips
1	8.64	44.61	3.85
13	11.07	44.7	4.95
11	10.3	44.86	4.62
12	8.96	45.35	4.06
3	9.3	45.89	4.26
10	9.86	45.91	4.52
7	9.07	45.95	4.15
2	9.18	45.89	4.21
5	9.33	46.00	4.30
6	9.40	46.16	4.34
8	9.60	46.31	4.44
4	8.88	46.70	4.13
9	8.80	47.14	4.15

TABLE NO. 6
BALSAM—12 HOUR COOKS
Yield of bleached pulp on weight basis and pounds of bleached pulp per cubic foot of chips.

Sample No.	Weight per cubic foot of bone dry chips	Per cent bleached pulp yield on basis weight	Pounds bleached pulp per cubic foot of chips
10	7.72	42.14	3.25
2	7.3	43.12	3.15
5	7.38	44.0	3.25
12	7.45	44.3	3.30
7	7.99	45.5	3.64
3	7.49	45.55	3.42
8	7.63	45.67	3.48
4	7.8	46.0	3.60

TABLE NO. 7
12 HOUR COOKS

Spruce			Balsam		
Sample No.	Lbs. bl. pulp per cu. ft. of solid wood	Cu. ft. wood per ton pulp	Sample No.	Lbs. bl. pulp per cu. ft. of solid wood	Cu. ft. wood per ton pulp
13	12.74	157.0	7	9.43	212.1
11	12.0	166.6	4	9.35	213.9
10	11.7	171.0	8	9.03	221.5
8	11.5	173.9	3	8.88	225.2
6	11.26	177.6	12	8.57	233.4
5	11.2	178.6	5	8.44	236.9
2	10.9	183.5	10	8.44	236.9
9	10.77	185.7	2	8.2	243.9
4	10.73	186.4			
7	10.7	186.9			
12	10.5	190.5			
3	10.3	194.2			
1	10.1	198.0			

The number of cubic feet of wood required to produce one ton of bleached pulp is plotted in Fig. E.

The tabulation of volume of wood required per ton of bleached pulp shows that the sample of spruce giving the lowest yield per cubic foot is better than the balsam which gives the highest yield per cubic foot. There is no apparent relation between yields of spruce and balsam from the same source. It is interesting to note that maximum difference in weight per cubic foot of spruce chips is 27.0 per cent, whereas the maximum difference

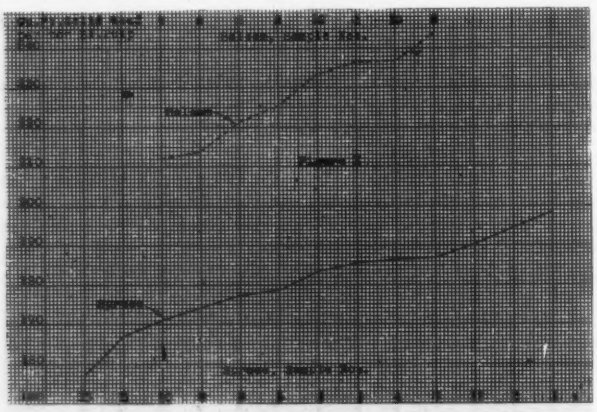


FIG. E.

in balsam was 9.5 per cent. In practically all cases spruce and balsam from the same source could be mixed and cooked together.

To emphasize the importance of avoiding cooking together woods which require different conditions, the following cooks were made. Spruce sample No. 4 which required 135 deg. C. maximum temperature in 12 hours to produce an easy bleaching pulp is an example of wood which can be pulped at a relatively low temperature. Balsam sample No. 10 which required 145 deg. C. for 12 hours is an example of wood which is harder cooking.

The individual tests on samples Nos. 4 and 10 cooked separately are given in Table No. 8.

TABLE NO. 8

	No. 4 Spruce 135 deg. C.	No. 10 Balsam 145 deg. C.
Bleach requirement	11.80%	10.50%
Unbleached pulp yield by weight	47.65	43.00
Bursting strength	147	109
Fluidity of unbleached pulp	5.4	11.0

A cook was made with 50 per cent by weight of spruce No. 4 and 50 per cent balsam No. 10 mixed together; the maximum temperature reached was 135 deg. C. as required by No. 4.

The results are given in Table No. 9.

TABLE NO. 9

Bleach requirement	19.26
Unbleached pulp yield by weight	48.27
Bursting strength	143
Fluidity of unbleached pulp	5.4

A second cook was made with 50 per cent of spruce No. 4 and 50 per cent balsam No. 10 mixed together; the maximum temperature reached was 145 deg. C., as required by No. 10.

The results are given in Table No. 10.

TABLE NO. 10

Bleach requirement	8.09
Unbleached pulp yield by weight	44.9
Bursting strength	117
Fluidity of unbleached pulp	8.2

Pulp produced in the last two cooks would be mixtures of pulps entirely different in quality. This pulp might be satisfactory for paper making but if it were to be used for further treatment in chemical processes, it would hardly be suitable and separation of the woods before cooking would be advisable.

It is seen by Tables 2 and 4 and Figs. A and B that the yield of pulp on a weight basis from balsam samples 10 and 2 are considerably lower than for the other samples. Also in Fig. E, showing cubic feet of wood required to produce one ton of bleached sulphite, balsam samples Nos. 10 and 2 give the lowest yield on a volume basis. It is very interesting to note that this wood was decayed, yet only 8 per cent of the logs were even slightly discolored for No. 2 sample and about 25 per cent discolored in sample No. 10. 35 per cent of the logs in balsam sample No. 3 were discolered but the wood was sound. No. 3 sample shows high yield on the basis of weight, and normal yield by volume considering the density of this wood. In balsam sample No. 12, 50 per cent of the logs were discolored and there was some heart rot in 10 per cent of the wood, yet it also shows normal yields on both weight and volume. This indicates that discoloration is not a true measure of decay.

Summary

This study shows the difference in pulping properties of spruce and balsam from different sources and indicates that it is possible to adjust cooking conditions so as to obtain optimum results of yield and quality of pulp. Perhaps the most striking variation noted is the difference in amount of solid wood required to produce a definite weight of pulp. Most mills purchase wood by the cord, and, while it is not within the scope of this paper to place the comparisons on a cord basis, this study was expanded to include measurement of number of sticks per cord, percentage of bark, actual length and diameter of sticks, trim, amount of cull wood and actual cubic feet of wood in a cord. These values were obtained by the woodlands department at Hammermill. Having obtained the yield of pulp per unit volume of wood, and having determined the physical and chemical properties of the pulp produced, the relative price at which wood for pulp production should be purchased from any source can be determined.

Other results of a practical nature which could be calculated are the variation in capacity of a mill caused by differences in quality of the wood being cooked, the increase in steam required per ton of pulp when wood of low specific gravity is cooked, or when wood requiring high temperature is digested. Consumption of certain raw materials would also be affected since approximately the same volume of acid would be required to cook wood which would give a low yield and wood which would give a higher yield of pulp on a volume basis.

This investigation was carried out with the assistance of various members of the Hammermill laboratories staff, particularly F. M. Truesdale and C. H. Alder, who made most of the cooks and physical tests on the pulp.

The Razek-Mulder Color Analyzer for Paper*

By Jackson Burgess[1]

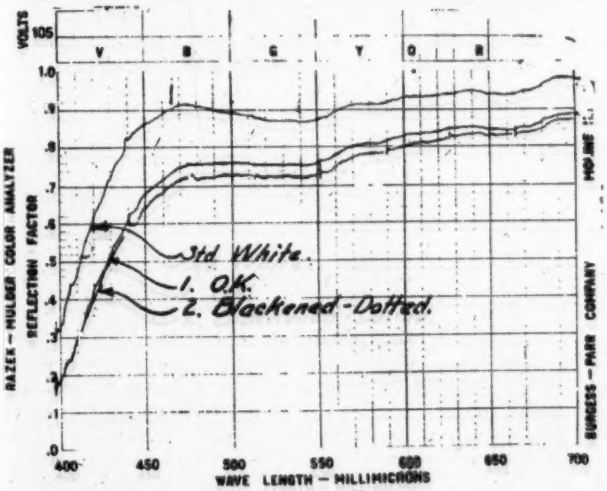
An accurate method of color analysis offers new fields for the investigator who is interested in the improvement of product or process. Color analysis is important in the specification of raw materials, in the control of processes in chemical manufacture, and in the establishment of standards for finished products. In all of these investigations the Razek-Mulder Color Analyzer provides the means for making scientific color analysis.

Exact color specification by use of spectrophotometric curves has been recognized as possible by physicists but the application of these curves to industrial problems has only recently become practicable. The tedious and difficult methods employed until recently have prevented the adoption of spectral analysis, and it was to expedite these methods that the Razek-Mulder instrument was developed.

This instrument is a photoelectric spectrophotometer adapted for making scientific determinations of the color of any material. By use of it, any color may be analyzed, plotted on co-ordinates, and in this way specified by the most accurate method known to science. Moreover, the analysis is performed in a period of less than a minute. Because the curve plotting is entirely automatic, and because the instrument depends upon a photoelectric cell rather than the human eye, the chance for error arising from human fallability is eliminated.

Meaning of Color

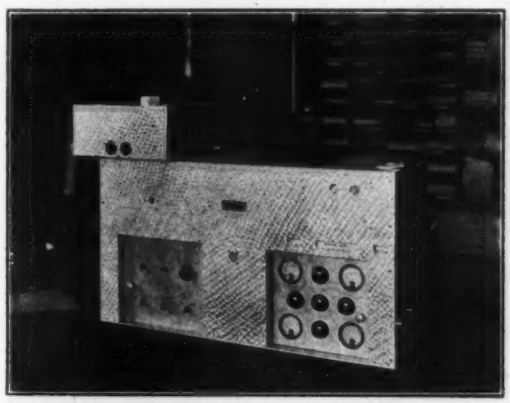
A brief resumé of the meaning of color will be helpful in explaining the operation of the instrument. Color may be defined as the reaction produced in the mind when certain wave-lengths of light enter the eye. The shortest wave-lengths which produce



Color Analysis Curve

visible light are about 400 millimicrons, while the longest are about 700 millimicrons. These figures vary slightly among different individuals, but are approximately correct. Light of 400 millimicrons wave-length produces a sensation of violet, and as the wave-length increases the sensation changes from violet to blue, green, yellow, orange, and red, until the wave-length is more than 700 millimicrons, at which point the energy again becomes invisible.

White light is light composed of equal intensities of wave-lengths from 400 millimicrons to 700. When white light falls upon a substance, three resultant processes may occur, namely absorption, transmission, and reflection. If all of the light is absorbed, the substance is black, since no light comes from it. If only part of the light is absorbed, and the rest reflected, the substance will be gray or colored. If the reflection is equal throughout the spectrum, the substance is gray, but if the material absorbs certain wave-lengths more than others, the remaining wave-lengths must be reflected back unequally, resulting in a color, which depends upon the combination of wave-lengths reflected. If the light is totally reflected and none is absorbed, the substance is pure white. Similarly, in transparent materials, if no absorption takes place the material is colorless; if some absorption



Exterior of the Analyzer

occurs equally throughout the spectrum, the material is gray; and if the absorption takes place unequally, the material is colored, depending upon the combination of wave-lengths transmitted. All colors, therefore, depend upon the different wave-lengths of light which comprise the color, and also upon the relative amounts of each wave length present.

Operation of the Color Analyzer

In determining colors by means of the Razek-Mulder instrument the sample is illuminated by an intense light which contains all of the wave-lengths existing in the visible spectrum. The light which is reflected from the surface of the sample (which is the cause of the specific color sensation) travels through a spectrometer, where it is separated into the various wave-lengths of which it is composed. A mirror arrangement reflects a narrow band of wave-lengths onto a photoelectric cell, which produces a small amount of electrical current. By means of a special amplifying circuit, the current is greatly magnified so as to actuate a galvanometer needle upon which is mounted a small mirror. Light from a straight line filament lamp strikes the mirror, and is reflected onto a photographic plate, where it thus records the position of the galvanometer needle. As the mirror, which reflects the narrow wave-length bands into the photoelectric cell is rotated, the light which strikes the photoelectric cell changes from violet through the spectrum to red, and with each change the output of the cell varies, and causes a change in the position of the galvanometer needle. The photographic plate is moved synchronously with the rotation of the mirror, thus exposing different areas to the beam of light reflected from the galvanometer needle. The motion of the photographic film, combined with the rotation of the mirror and its subsequent effect upon the galvanometer needle, thus produces a spectrophotometric curve which indicates exactly what concentrations of each band of wave-lengths exists in the original light. Co-ordinates and a distinguishing number are produced on the film by a secondary exposure. Such a spectrophotometric curve is the only exact specification of a color. Any color which produces the same curve is the same color, and any different color will produce a different

* Presented at the fall meeting of TAPPI, Erie, Pa., Sept. 3-5, 1930.

[1] Treasurer, Burgess-Parr Company, Chicago, Ill.

curve depending upon the extent of the variations between two colors.

In this way, absolutely permanent color standards may be established, and color comparisons can be quickly and accurately made.

Shades of White

A problem of interest to paper manufacturers and one which will be graphically demonstrated by this instrument is the comparison of various white paper samples. The accompanying graph contains the curves of two different white papers which look almost identical to the untrained eye, but which do have a color difference, which the instrument detects. In the same figure is the curve for the light reflected from a block of pure magnesium carbonate which has been adopted as the standard white of the instrument.

At the present time insufficient work has been done with the instrument to state that its use will definitely eliminate the difficulties of color matching or of controlling either the color or whiteness of papers. However, it is universally recognized that the first step in perfecting any such control is that of developing a scientific and practical method for making determinations. As an answer to this first problem this instrument was developed and is available for use in studying the problems of color control in the paper industry, as well as in other fields of color problems, and there is every reason to believe that by its use, the color of raw materials and semi-finished products can be correlated to the colors of the final products. When this step is accomplished the control of the color of paper will be a simpler matter, and when such control is acquired and uniformity of product is thus improved, some of the manufacturing and selling difficulties in the paper industry will be eliminated.

Matching Colors with the Colorscope*

By H. H. Sheldon[1]

The colorscope is based essentially upon the ability of the now well known photoelectric cell to differentiate light both as to color and intensity and to cause a corresponding electrical response through suitable electrical circuits. In the colorscope two such cells are used in a balanced bridge circuit of special construction and the difference between the two responses in the individual cells is amplified and noted through the use of a galvanometer of the portable type. Because of the degree of amplification it is possible to use an instrument of this type

PROFS. SCHNEIDER AND SHELDON
OPERATING COLORSCOPE

without resorting to very sensitive, and consequently unsteady, measuring instruments. Because of the use of the two cells in this balanced fashion the device is particularly useful for determining the difference between two samples of material and telling also the degree of that difference. As the samples may be inspected simultaneously the result is at once definite. There can be no question as to whether or not the characteristics of the circuit have changed as may be the case in machines where one reading is taken and then the second sample inserted and measured. Other advantages of this arrangement will be apparent as the description goes on.

To understand thoroughly the operation of the colorscope it is perhaps best to follow through the operation of comparing two samples from the time they are inserted in the machine. Let us consider two samples A and B. First two discs are cut from the sample A and are inserted in the machine. These samples, which are about an inch in diameter, are put into holders of this same diameter and when inserted form part of the surface of an integrating sphere. Inside the sphere are two powerful incandescent bulbs for the purpose of lighting the samples. The lighting is accomplished by the indirect light which is reflected diffusely to the samples from the walls of the sphere. The samples are shielded from the direct light of the lamps. In this way the effects of sheen are eliminated. A glossy material may be compared directly with one of dull finish without the degree of sheen entering into the measurement. The samples are cooled by air blown across their surfaces.

The problems of weave or texture is taken care of by rotation of the samples in opposite directions. This blends the material into a homogenous surface from the point of view of the machine.

The light from these samples is focussed upon the two photoelectric cells by a pair of lenses and light from all other parts of the sphere is cut off by means of suitably placed baffles.

Operation of the Colorscope

Assuming that the two "A" samples are now in the machine and that they are alike, then the two cells should respond in the same way if the cells were identical. Two identical cells would be next to impossible to obtain so other means are provided for compensating for the differences which may obtain here as well as in the amplifying system. Thus with the two "A" samples in place the machine is balanced to zero by means of a controlling rheostat. This, together with the main switch, form the only controls on the machine. There are no complicated adjustments to be made. It is simpler to operate than the modern radio set.

When adjustment to zero has been made one sample "A" is removed and a sample B with which "A" is to be compared, is substituted for it. Observation of the pointer then shows how much the one sample differs from the other.

Powders are measured in exactly this same manner, the samples being put in a container with a flat glass side. Liquids, glass, and other transparent materials are placed on the side of the integrating sphere nearest the photoelectric cells and the light passing through them used for the purpose of comparison.

What has been said applies of course only to the total color effect, but if one wishes to find out in what color regions the

* Presented at the fall meeting of TAPPI, Erie, Pa., Sept. 3-5, 1930.
[1] Professor of Physics, New York University, New York, N. Y.

samples differ this can also be done. It is accomplished by placing suitable color filters before the photoelectric cells. These may be standard color filters, which are readily obtainable on the market, or they may be special filters such, for example, as dye solutions, made up to meet a special problem. The possibilities of the machine are best realized in its use. Experience has shown that clever dyers gain great facility in its use on various problems as they become acquainted with it through constant practice and observation.

Colorscope Not a Color Analyzer

I should like to mention what I consider an outstanding characteristic of this machine. I can do that best by telling you what the colorscope is not. It is not an analyzer, that is, it does not produce an analytical curve. While such curves are interesting laboratory reports, they often presented many difficulties in practical work on color formulas. If we compare two colors and make two analytical curves, while assuming that the electrical and mechanical conditions are identical, the colorist is then faced with these two questions,—First, does the difference between these two curves mean that the first color is so many commercial shades darker than the second? and secondly if one graph shows there is a little more blue in it than the other, how shall one interpret this in terms of the particular aniline blue dye being used, which in turn may include red and yellow in its spectroscopic make-up. In other words, to compare these two graphs, assuming they were accurately made, would present as many difficulties as looking at the two original colors and interpreting their difference with the eye. Faced with these questions an endeavor was then made to build a machine which, without producing charts that had to be interpreted, would show at once whether two samples matched or not, would show at once how far apart they were in terms of commercial shades, and would indicate in which direction color formulas could be changed to make these two samples match. The colorscope does these very things and in addition enables its user to make several other valuable determinations.

Applications

The three white tile standards included with the machine are very closely matched. The third one is very slightly darker than the second one. It is somewhat difficult to distinguish these with the eye. When we balance the machine on the first two and then put in the third, we find that our needle swings distinctly to the right. We have calibrated our scale in terms of commercial shades so that we can see at once the difference in color value without relying upon north light, the strength of one's eyes, or human judgment. In just this way it is possible to compare any of these samples of white paper and to grade them to show their relative whiteness. The same can be done, of course, with blue papers, browns or other colors.

In addition to these quick determinations, it is possible to make a secondary reading by means of color filters. If we are comparing two colors that do not match, we can read the difference between these colors by first "balancing our originals" with the red filter in the machine so that we will only measure the difference of the reflected red light. In a similar way we can determine whether we are lacking yellow or blue in our mixture. Thus these secondary readings show us in a general way what steps ought to be taken to improve our color formula. When these difficulties are corrected the two samples of course will show a match on the machine.

In this way too, by means of the glass cells that are furnished, one can measure the color of liquids that are transparent. These cells for liquids fit into grooves similar to the grooves made for the filters, hence it is possible to use these liquid dyes themselves as filters. Let us assume that we wish to produce a light blue paper. Were we to measure the difference between this and our pulp or original material by means of the color filter, we would see how much of the filter blue is lacking in the original. If we now take the same measurement through the glass cell containing the blue dye to be used, our reading is then determined by the actual color value of the particular blue dye being used.

It is possible also to check the color purity of dye powders by putting them in the small containers that come with the machine and inserting them into the holders. Such a test will show whether the color of the dye we are buying is the same or different from the last shipment. A further test can show whether this dye has the same potency or "mileage" as the last shipment. Such an examination is made by mixing a standard strength of our dye, let us say a gram to ten liters, dipping a piece of cloth or paper into it, and comparing its color with a similar sample made from the previous shipment of dye. In this way it is possible to determine the affinity of various coloring materials.

I have not dwelt in any detail upon these points, but have just listed what I consider outstanding features in manufacturing procedure. Inasmuch as it is possible to determine differences in color value between any two samples, it seems possible that one might devise other tests and other checks by comparing standards against shipment, fading of colors, or observing differences from a standard white magnesium carbonate block. I might add that one can always check the accuracy of any observation at once by returning one of the original samples and seeing that the needle reads zero. The sensitivity of the machine too can always be checked by putting in the standard plates that come with each machine, and this sensitivity can be adjusted higher or lower with a small rheostat on the inside of the machine. Thus one could make or adopt particular standards and have his machine constantly react to these.

Coagulation Factors in Water Clarification*

By F. E. Divine[1]

The water used by Hammermill Paper Company in its pulp and paper mill comes from Lake Erie, one of the five Great Lakes. The water works is typical of most of the sanitary water plants along the great lakes. The following is a description of the plant.

The intake is in eighteen feet of water and consists of a crib 28 feet square extending above the lake level and is built of 12 by 12 timbers surrounded by large stone. A 48 inch steel pipe line buried under the bed of the lake carries the water to the pump well. The pump well is excavated in the solid rock to a depth of eighteen feet and is covered with a concrete slab. The pump house, located along the pump well, has the pump floor one foot below the average water level of the lake. In this pump house are located the pumps handling water to the settling basin and to the condensers of the power house. The pumps are motor driven units of 5000 gallons per minute capacity. The pipe lines from the pump station pass up the hill to the filter plant and then to the settling basin, a distance of about five hundred feet.

The settling basin is built of concrete, is banked with earth and has a concrete roof covered with earth. The object of the roof being to keep down the growth of the plant life in the water by keeping out the light. The basin is 180 feet long, 75 feet wide and 18 feet 6 inches deep. It is what is known as a "round the end" basin. The water enters at one end, passes up one side and around the end of the center wall and out at the same end as it entered. The capacity is 1,700,000 gallons. The water flows by gravity from the settling basin to the filter plant through a 36 inch pipe. The filter plant consists of twenty-five rapid sand filters.

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[1] Hammermill Paper Company, Erie, Pa.

There are three different types. The first or original filters installed in 1898 when the mill was first built, are round, wooden tanks with a power driven rake for agitating the sand during washing. The second filters are small concrete tanks each having a capacity of 500,000 gallons per day and are washed with a combination of air and water. The third type are large concrete tanks, each having a capacity of 2,500,000 gallons per 24 hours. The water then passes to a clear well which is located underneath the filters, and then is pumped to the distribution system throughout the mill.

Coagulation Problems

In the operation of the water works, many interesting problems have come up. One of the most difficult is that of coagulation or sedimentation. We have found that aluminum sulphate is the best coagulant that can be used with the lake water.

The alum is mixed with water into the solution. The solution we are using at the present time is 3600 pounds of aluminum sulphate to 3000 gallons of water. This solution is introduced into the raw water by means of a proportionate control apparatus so that every gallon of water passing to the settling basin receives a certain amount of alum. The apparatus is directly connected or operated by the venturi meter which is located in the pipe line, carrying the water to the basin. Up to the time that certain changes were made, of which we will speak later, the alum was introduced into the water at the filter plant. There is about five hundred feet of 36 inch pipe line between the filter plant and the settling basin.

At different seasons of the year we have been having a great deal of trouble getting the alum to coagulate and settle out in the basin. During the summer when the turbidities are low, around five parts per million, and at times when the sewage from the city gets into the water, we have our troubles. It has not made any difference if we added small or large amounts of alum—it seemed to pass through the settling basin, then settle in the pipe lines after the filters.

Laboratory Tests

As the coagulation took place after the filters, experiments were tried in the laboratory to determine what we could do to overcome this trouble. Tests were made for the time required for settling with different doses of coagulant and at all times of the year. The size of the flock or flake obtained by the coagulant depends to a very large extent on the temperature of the water. During the winter when the temperature of the water is around 35 degrees F, the flock obtained is very small and usually requires more alum than during the warm weather. This flock, when agitated very slowly in a bottle, would come together and settle but when working in a heated room, the bottles soon become warm and the results we wanted came much better than they did in the operation of the mill filter plant. An attempt was made in the large settling basin to demonstrate that slow mixing would enlarge the size of the flock and cause it to settle rapidly. Baffles were installed in the entrance side of the basin. These were computed so that at normal operation or flow, we would have a velocity of flow of water of one foot per second and a mixing period of ten minutes. This change seemed to help. In fact, at a later date, we added sufficient baffles to make a total mixing time of twenty-five minutes. But even so, we did not get good results at times of low turbidity. Apparently, the time of sedimentation was too short. The question was asked "How much time is necessary?" (The practice of the water works through the country is to allow about four hours as a minimum.) The questions were gone over in the laboratory and in the office and the final decision was that we should construct an experimental sedimentation plant.

Experimental Sedimentation Tank

In the spring of 1929, we started the construction of the experimental plant and it was put into operation during July of the same year and operated over a period of four months.

The capacity of the plant was 100,000 gallons per 24 hours. As we wished to determine the required settling time for the mill plant, the basin was built for an eight hour settling period, as a maximum time requirement. The basin was 58 feet 6 inches long, 9 feet 5 inches wide and carried a depth of water of 9 feet. In order to be able to make tests for periods shorter than eight hours, an overflow weir and removable partition was installed at 29 feet from the inlet end, and another at 44 feet. This gave us a four hour and six hour period of settling.

The rate of flow of water into the basin had to be constant and this was obtained by constructing a constant head orifice to give the rate of 70 gallons per minute. This amount of water was not wasted as after passing the basin, it was carried to one of the mill filters.

The alum supply was from the main mill supply through a lead pipe and controlled by a constant head orifice box.

Difficulties Encountered

On starting the operation of the experimental plant, it was found that there were short circuits in the basin. The method to measure the amount was by adding a red dye to the water and noting the time required for the colored water to pass over the weir. When the dye was first used, we found that instead of having a period of four hours in the first section, we had the red dye passing over the weir in fifty minutes. By means of baffles near the inlet and outlet, we were able to bring the time to nearly the four, six and eight hour periods required.

During the opertion of the experimental plant, there were days when we could not get good coagulation. It did not make any difference whether we had a four, six or eight hour settling period or how much alum we used.

When the basin was operating well, large flakes of alum precipitate could be seen going over the top. In a number of cases we tried to take a sample by lowering an open bottle into the basin, but when the water and precipitate were lifted up, the flock was all broken in very small pieces due to the agitation of pouring into the bottle and it did not reform in less than an hour, whereas at first it had formed in three minutes. This showed that possibly the alum flock was being broken up after it had formed. The alum was added in the water orifice box. The location of the alum feed was changed to the main inlet chamber in the basin. The amount of alum required was less in the new location, the period of settling was lessened and as a whole, the point of application of the coagulant seemed to be the objective to be decided rather than increasing the settling time.

Mill Application

After this, we ran a number of tests on our mill supply; we introduced the alum into the water at the inlet of the large settling basin and from the data acquired, we could furnish good water with a very much less amount of alum.

This spring we changed the location or point of application of the chemical to the water. We are now introducing the aluminum sulphate at the entrance to our settling basin by forcing the solution through a lead pipe by means of an eductor. The eductor eliminates the need of pumping the alum solution, as a pump handling alum is always troublesome. The amount of alum used per day has been reduced. The water furnished during the period in which the new alum system has been operated, has never passed above one part per million of turbidity in filtered water.

The change in location of the point of application of the chemical solution has eliminated the very rapid mixing which we had in the five hundred feet of 36 inch pipe between the filter plant and the settling basin. Samples from different points in the baffles of the basin show that the flock gradually increases in size during the twenty-five minutes of slow mixing.

The results obtained show that in sedimentation or water treatment, the mixing of the water and chemical has to be very slow so as not to break up the flock after it has once been formed.

Air, Heat and Moisture Balance for Paper Machine Room*

By A. S. Goodrich[1] and H. G. Brehme[1]

Tests have been made recently by us in order to determine the amount of steam required in the paper machine driers and the quantity and condition of the air passing through the machine rooms. Such information is valuable in order to see if the efficiency of the present equipment is reasonable or can be improved. Then the problem is—What changes, if any, are feasible or necessary; how much will they cost; will there be increased efficiency and betterment and what savings, if any, will be made? If change or improvements are made, then it is desirable that another similar test be run in order to obtain comparative data.

We propose to describe in this paper the general features of the air and steam supply, the method of making the various tests and the data obtained.

General Description

Tests were made on Hammermill Paper Company's No. 3 and No. 4 paper machines which are located in the same room. The machine building is of typical brick wall construction with basement for the drives. The roof is of tongue and groove plank covered with roofing felt. Fig. 1 shows the plan of the machine room, and location of the machines and adjacent buildings. Fig. 2 is a typical cross section of the machine room and shows the relative location of the machines, cross ventilating systems, main air supply ducts and roof ventilators.

The possible sources through which heat, air and water can enter or leave the room are:

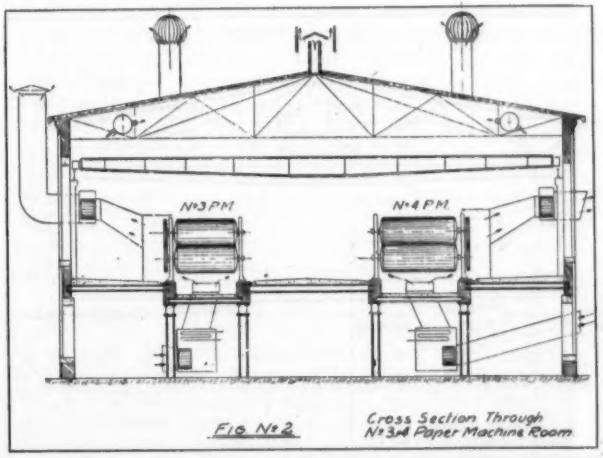

Fig. 2.

Entering

I. Steam for the paper machine driers
II. Room air supply
  a. Main air supply fan
  b. Drier pit supply fans for each machine
  c. Calender fans for each machine
  d. Adjacent rooms through doorways
  e. Out-of-doors by leakage
III. Power consumed as friction and converted into heat
IV. Paper
V. Steam to wire and dandy roll (not measured)

Leaving

VI. From drier circulation system
  a. Condensate
  b. Vacuum pump
VII. Exhaust air
  a. Exhaust fans of cross ventilation system for each paper machine
  b. Ridge ventilator
  c. Stack ventilators

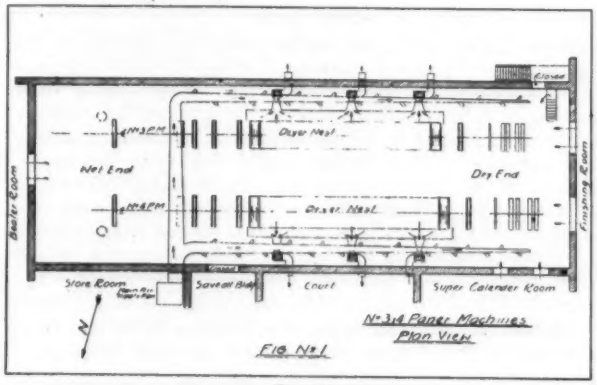

Fig. 1.

VIII. Paper
IX. Building losses

Heat enters and leaves with all the items listed. Air enters with item II and leaves with item VII. Water carried by the air enters with item II but the largest amount comes from item IV and leaves with item VII.

Steam Supply

No. 3 paper machine has 32 driers, 48 inches in diameter and 102 inch face. The total drier area is 3,420 square feet and the effective area is 2,400 square feet.

No. 4 paper machine has 32 driers, 48 inches in diameter and 130 inch face. The total drier area is 4,350 square feet and the effective area is 2,920 square feet.

Both machines are supplied with steam in the same manner, each machine is driven by a variable speed engine, the auxiliaries of each machine are driven by a constant speed engine. Steam from the engines exhausts into the drier supply header. Live steam enters the drier supply header through a reducing valve. The condensate from the driers discharges to a header and in each case is returned to the boiler house by means of tilting traps.

A vacuum pump removes the air from the return headers and a certain amount of uncondensed steam coming through with air is condensed by water injected into the pump.

Air Supply

Air for the paper machine building is supplied by an engine driven fan located in the basement. The fan discharges into a large rectangular duct which enters the paper machine room and divides into two branches which run along the room close to the outside wall at the back of the machines and just under the roof.

Each machine has a fan which supplies heated air from the basement or outside to the drier pit where it is distributed by means of a duct. The drier pits are closed.

* Presented at fall meeting of TAPPI, Erie, Pa., Sept. 3-5, 1930.
[1] Engineer, Hammermill Paper Co., Erie, Pa.

Each machine has a calender fan which takes air from outside and blows it on the calender rolls.

All the remaining air comes from adjacent buildings through openings or doorways and from out-of-doors.

Moisture

A certain amount of moisture enters with the air and all the water evaporated from the paper is removed by the air passing out. Air leaves the room through three cross ventilating fans for each machine, through a continuous ridge ventilator and through three vertical stack ventilators, two of which are located over the wet end of the machines and the one over the winder. Most of the water removed comes from the paper being dried. The air also picks up some moisture evaporated from the wet end of the machine and from the steam supplied to the surface of the wire and to the dandy roll. We could have measured the steam supplied to the wire but did not; we could not measure the amount of evaporation at the wet end but understand that this is considerable and may amount to 10 to 20 per cent or more of the total amount of moisture leaving the room.

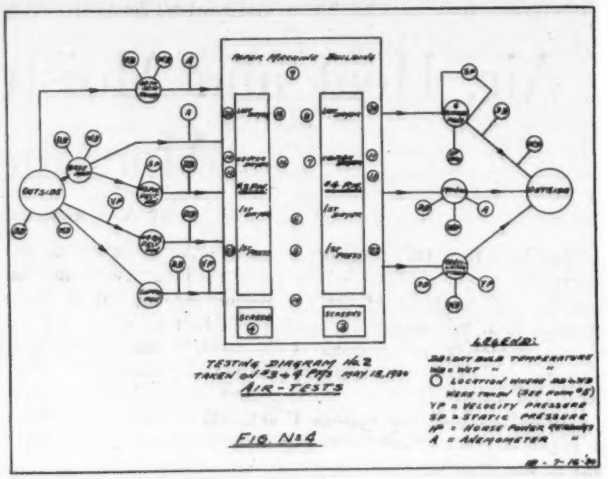

FIG. 4.

Heat Tests

Pressure gages and thermometer wells were installed in the steam supply lines to each machine as shown in Fig. 3 and pressure and temperature readings were taken of the exhaust steam from the engines, the live steam after the reducing valve and the mixture of the steam in the supply header. All readings showed some superheat. Therefore, the quality was easily determined. In order to measure the condensate, the discharge lines of the steam traps for each machine were connected to a cooler consisting of sixteen 2 inch pipes each about 10 feet long connected by means of return bends and immersed in a wooden tank through which running water from the mill supply was passed. This eliminated the flash steam. The condensate for No. 4 paper machine was measured by means of a Cochrane tilting type meter calibrated for 117 pounds of condensate for each discharge of the bucket. This meter was provided with a counter and also a graphic recorder.

The condensate from No. 3 paper machine was measured by means of barrels which had been previously calibrated with scales. The number of barrels filled was recorded and the quantity computed.

The temperature of the condensate in each case was taken before entering the condenser coil. The total heat in the condensate substrated from the total heat in the steam supplied to the dryers plus the amount of heat passing through the vacuum pump gave the total amount of heat furnished by the steam to the dryers.

The heat passing through the vacuum pump was determined

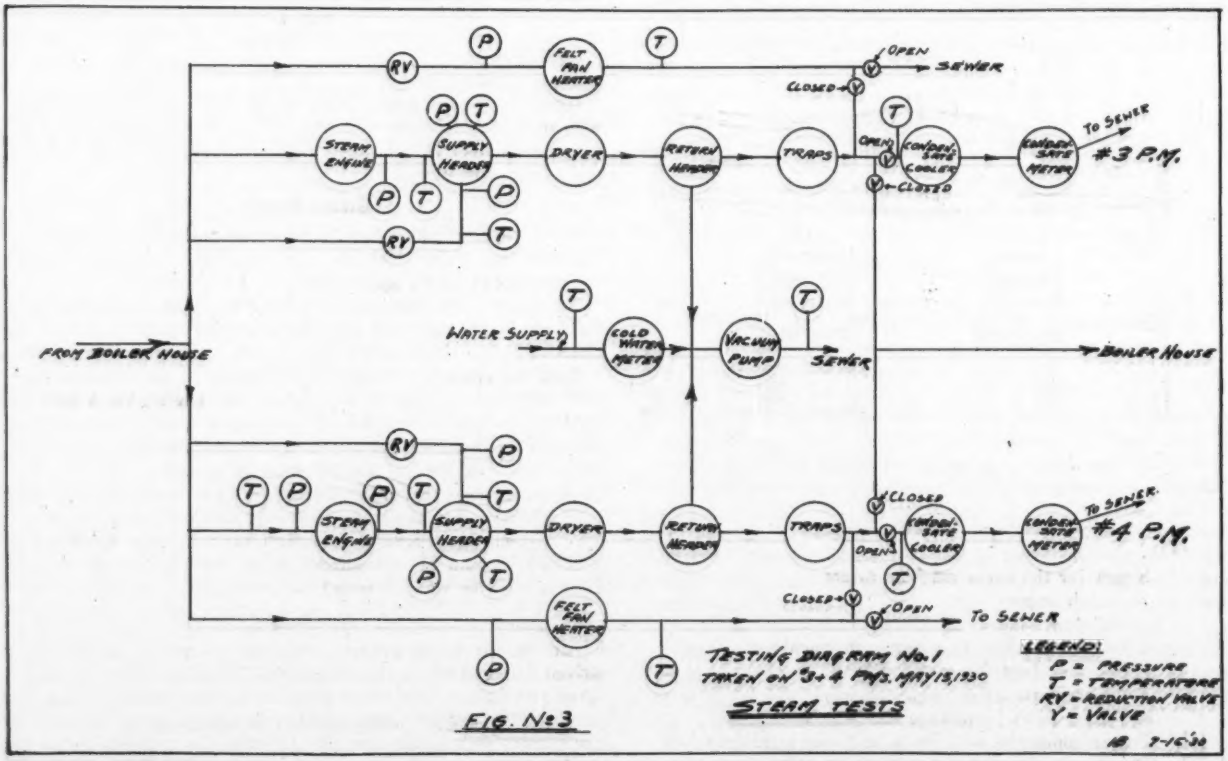

FIG. 3.

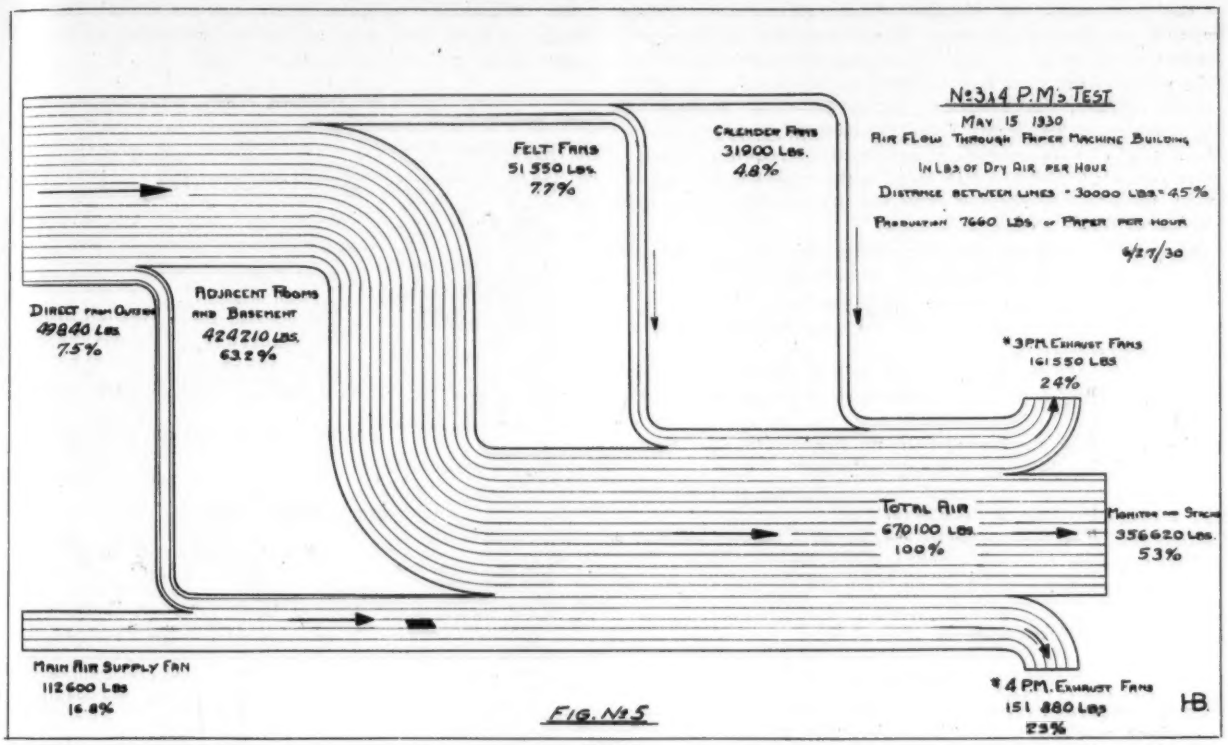

FIG. 5.

by measuring the amount of water with a displacement meter and taking the temperature before entering and after leaving the pump. The amount of this heat was divided among the two machines in proportion to the paper produced.

In order to determine the amount of heat supplied with the air, it was necessary to measure the temperature and condition of the outside air, measure the quantity handled by each fan and the temperature and condition of the discharge. From this we could determine the amount of heat units added to the air by the various heaters. In each case we considered the transmission of heat as being 100 per cent efficient. We took the total heat of the steam as being the same as that in the live steam header and assumed the condensate leaving the heaters to be 212 deg. F.

The heat leaving with the air exhausted was determined by measuring the quantity and condition of the air.

Air Tests

In general, the air handled by the fans was determined by means of static pressure readings before and after each fan show in Fig. 4 for those units of which we had the performance curves. The air handled by the other fans was determined from velocity readings and area of ducts. All readings were taken by means of a pitot tube and draft gauge. The velocity of the air entering from adjacent buildings through doorways was measured by means of the anemometer. Four readings were taken in each doorway and the average velocity used in conjunction with the area of the opening to determine the quantity. These figures are not expected to be exact. The ridge ventilator consisted of 48 separate openings or stacks, 48 inches long and of various widths from 12 to 18 inches. The velocity of the air through these openings was computed from an average of three anemometer readings and the area. The amount of air passing through the vertical stacks was obtained in a similar manner.

In order to determine the quality or condition of the air, dry bulb and wet bulb temperatures were taken.

The air which comes in through the doorways is heated in the adjacent buildings by their heating systems. We assumed that the steam available for this had twelve pounds pressure and that the latent heat was used.

Dry and wet bulb temperature readings were made in the adjacent rooms, basement and out-of-doors. The amount of air, water and heat coming in was calculated. When computing air balance, it was found that more air was going out than coming in. The excess air was assumed to have come in as follows:

From adjacent rooms	25 per cent
From basement	25 per cent
From out-of-doors	50 per cent

Dry and wet bulb temperatures were taken twice at various locations and elevations in the paper machine room in order to determine the air conditions.

Moisture Tests

The moisture entering the room with the air was determined from the quantity and condition of the air as regards moisture content. The amount of moisture leaving the room with the air was calculated in a similar manner. Most of the water added to the air passing through the room is that evaporated from the paper when passing through the dryers. This quantity can be checked by measuring the moisture content of the sheet before entering the driers and the moisture content of the sheet after leaving the driers, measuring the production of the machine and calculating the total pounds of water leaving the sheet over any definite period of time. As stated before, the air also carries out moisture evaporated from the wet end of the machine but this could not be measured.

When ready to start the test, the sheet was broken down at the third press and run up on the doctor. Samples of paper were taken one foot apart across the whole width of the sheet and placed in jars. After the sheet was passed over the driers and conditions became settled, samples were taken at various points across the sheet for moisture tests. Samples were also taken in order to determine the basic weight. The moisture tests and basic weight tests were repeated at the end of the test run.

Besides knowing the moisture content of the sheet before entering and leaving the driers, it was necessary to know the amount of production in order to compute the water evaporated. The width of the sheet was measured on every roll. The speed of the machine was determined by taking r.p.m. readings of the driers every half hour. With this data, the gross production, the amount of water evaporated and the theoretical heat required were computed. All the data given in this report is referred to gross production. The test was run continuously from 9:00 A. M. until 4:30 P. M.

In order to make the various readings and tests, several men were employed. Their duties were as follows:

Two men made the condensate measurements.

One man read the steam pressure and temperature gauges every half hour.

One man took the dry and wet bulb thermometer readings out-of-doors, in the paper machine room and in the adjacent buildings.

One man took the anemometer readings of the air passing through the doorways and out the stacks.

Two men took the draft gauge and the dry and wet bulb thermometer readings at the various fans

One man took the production records of the paper machines.

Two men took the moisture and weight samples.

One man took the speed of the fans and the power required by the motors driving the fans.

One man had general charge of the test.

Results

Data obtained or calculated is shown in tables following. Calculated results are given below but they are best shown by the charts. Fig. 3 is a diagram showing the location at which readings were taken for the steam tests. Fig. 4 shows where readings were taken for the air tests. Fig. 5 is a diagram of the air flow through the paper machine room in pounds per hour and may be considered as an air balance chart. Fig. 6 is a moisture balance chart and Fig. 7 is a heat balance chart.

We acknowledge the valuable assistance received from The Drying Systems, Inc. who advised us regarding methods of preparing for and making the tests.

Air Exhaust Data

Paper machine No. 4

		No. 1 Fan	No. 2 Fan	No. 3 Fan	Ridge	Stack
1.	Dry bulb temperature	118	126	160	112	108
2.	Wet bulb temperature	96	105	106	88	88
3.	Specific volume	15.32	16.07	16.75	14.96	14.92
4.	Cu. ft. per min. actual	8,900	15,600	18,000	4,900	1,370
5.	Pounds humid air/ min. (4÷3)	583	970	1,075	328	92
6.	Pounds water/pound air	.0329	.045	.038	.023	.0238
7.	Pounds water/pound air pickup	.0253	.0374	.0304	.0154	.0162
8.	B.t.u.'s/pound air referred to 32 deg. F.	55	69	72	43.5	41
9.	Pounds water/min. (5×6)	18.5	41.5	40	7.3	2.2
10.	B.t.u.'s pickup per pound of air	39.5	54.5	57.5	29.0	27.5
11.	B.t.u.'s/min. (5×10)	22,900	50,000	62,000	9,500	2,500
12.	B.t.u.'s/ hour	1,375,000	3,000,000	3,720,000	570,000	150,000
13.	Total B.t.u.'s per hr. referred to 32 deg. F.	1,925,000	4,050,000	4,645,000	855,000	284,000
14.	Dewpoint deg. F.	92	101	97	81	82
15.	Relative humidity per cent	44	48	18	38	46

Air Exhaust Data

Paper machine No. 3

		No. 1 Fan	No. 2 Fan	No. 3 Fan	Ridge	Stack
1.	Dry bulb temperature	120	131	122	109	116
2.	Wet bulb temperature	97	105	97	96	88
3.	Specific volume	15.41	16.0	15.45	15.16	15.06
4.	Cu. ft. per min. actual	8,900	18,000	17,000	82,000	4,500
5.	Pounds humid air/ min. (4÷3)	578	1,115	1,100	5,450	300
6.	Pounds water/pound air	.033	.0443	.033	.0376	.0208
7.	Pounds water/pound air pickup	.0254	.0367	.0254	.03	.0132
8.	B.t.u.'s/pound air	54	69.5	55.5	59	43
9.	Pounds water/min. (5×6)	18.4	47.5	35.00	204	6.5
10.	B.t.u.'s pickup per pound of air	39.5	55.0	41.0	44.5	28.5
11.	B.t.u.'s/min. (5×10)	22,800	61,000	45,000	242,000	8,500
12.	B.t.u.'s/hour	1,370,000	3,660,000	2,700,000	14,500,000	515,000
13.	B.t.u.'s/hour referred to 32 deg. F.	1,920,000	4,700,000	3,680,000	19,332,000	770,000
14.	Dewpoint deg. F.	92	101	92	93	80
15.	Relative humidity per cent	43	42	40	62	33

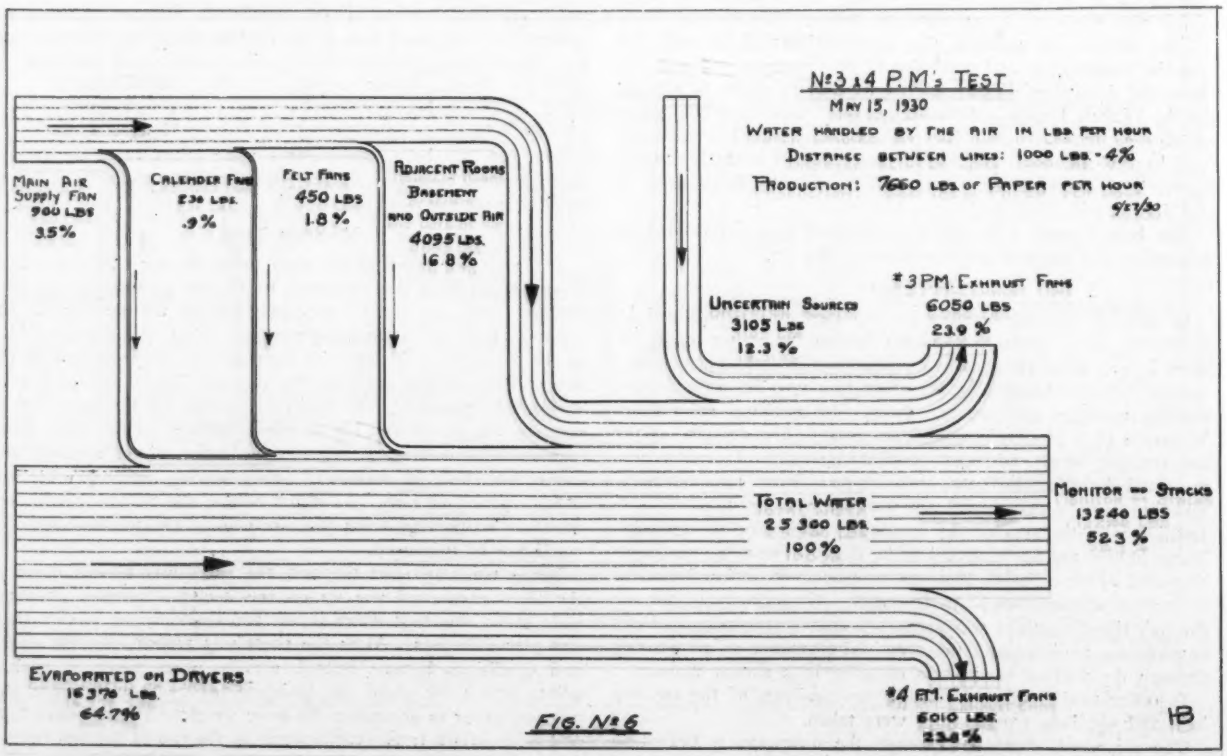
No 3 & 4 P.M.'s TEST
MAY 15, 1930
WATER HANDLED BY THE AIR IN LBS PER HOUR
DISTANCE BETWEEN LINES: 1000 LBS. - 4%
PRODUCTION: 7660 LBS OF PAPER PER HOUR
6/27/30
MAIN AIR SUPPLY FAN 900 LBS 3.5%
CALENDER FANS 230 LBS. .9%
FELT FANS 450 LBS 1.8%
ADJACENT ROOMS BASEMENT AND OUTSIDE AIR 4095 LBS. 16.8%
UNCERTAIN SOURCES 3105 LBS 12.3%
#3 P.M. EXHAUST FANS 6050 LBS 23.9%
TOTAL WATER 25300 LBS 100%
MONITOR & STACKS 13240 LBS 52.3%
EVAPORATED ON DRYERS 16370 LBS 64.7%
#4 P.M. EXHAUST FANS 5010 LBS 23.8%
FIG. No 6
HB

FIG. 6.

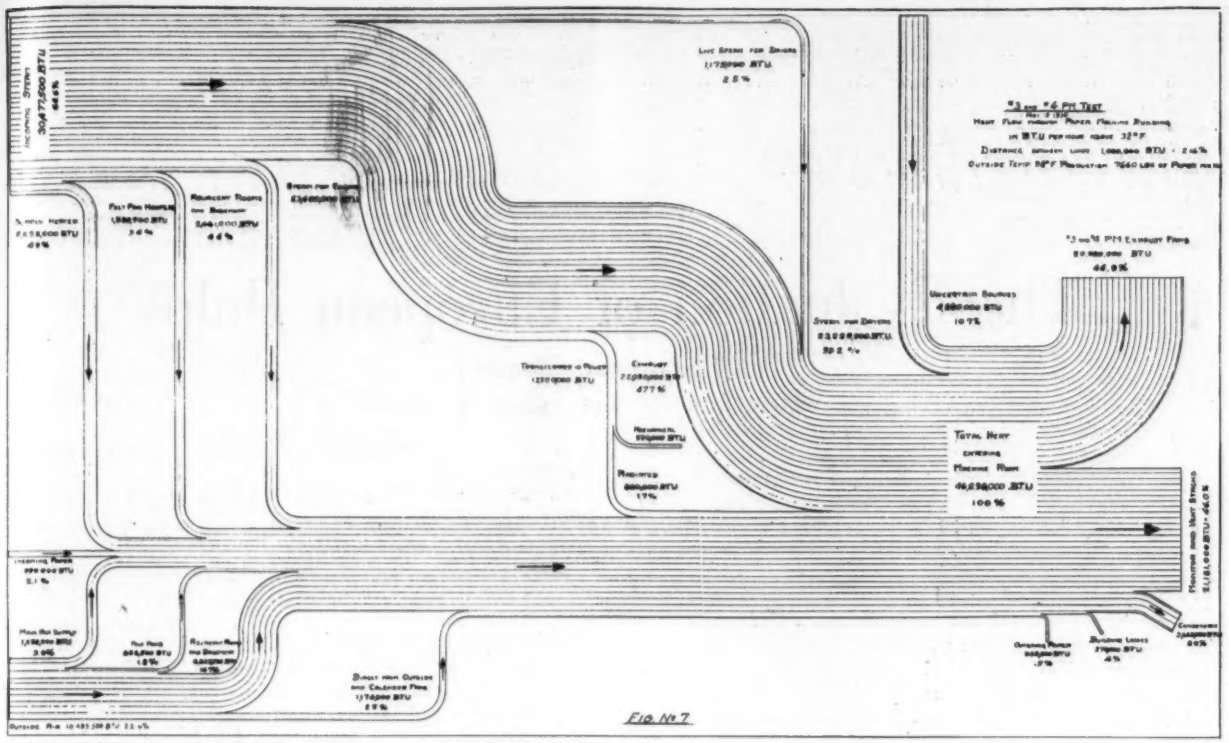

FIG. 7.

Production Data

Paper machine No. 3

Date: May 15, 1930	Time: 9:00 A.M. to 4:30 P.M.
Kind of paper:.....20 lb. (500—17x22) bond (100% sulphite)	
Width of untrimmed sheet in inches	92.1
Speed of machine in feet per minute	471
Temperature of sheet entering driers in deg. F.	82
Per cent water in sheet entering driers	68.4
Per cent water in sheet leaving driers	5.0
Basic weight in pounds 500—17x22	20.28
Time paper was off drier in minutes	12

Paper machine No. 4

Date: May 15, 1930	Time: 9:00 A.M. to 4:30 P.M.
Kind of paper:.....20 lb. (500—17x22) bond (100% sulphite)	
Width of untrimmed sheet in inches	119.34
Speed of machine in feet per minute	451
Temperature of sheet entering driers in deg. F.	85
Per cent water in sheet entering driers	69.61
Per cent water in sheet leaving driers	5.00
Basic weight in pounds 500—17x22	20.51
Time paper was off drier in minutes	8

Air Supply Data

Paper machines No. 3 and No. 4

By Fans	Volume C.F.M.	Lbs. air per hour	Temp. to be raised deg. F.	Heat Transfer B.t.u.'s per hour	Heat Transfer Lbs. steam per hour
Main supply fan	29,400	113,500	83	2,250,000	2,360
Pit supply fan (No. 3 P.M.)	10,400	38,000	108	982,000	830
Pit supply fan (No. 4 P.M.)	3,200	14,500	156	482,200	460
Calender fan (No. 3 P.M.).	3,100	14,000	...	.....	....
Calender fan (No. 4 P.M.).	3,980	18,130	...	.....	....
Total supplied by fans...	50,080	218,130	...	3,714,200	3,650
From Adjacent Rooms					
Beater room	17,700	76,500	...	.....	....
Finishing room	40,700	179,360	...	.....	....
Supercalender room	17,800	74,720	...	.....	....
Basement	10,400	45,600	...	.....	....
Total from rooms.....	86.600	376,180	...	.....	2,100

Steam Data

1.	Paper machine No. 3		
2.	Date: May 15, 1930	Time: 9:00 A.M. to 4:15 P.M.	
3.	Steam supply—pounds gage....10.6	Temp. deg. F.....	274
4.	Quality .....33 deg. S.H.	B.t.u.'s per pound....	1,177
5.	Condensate temp. deg. F.....217	B.t.u.'s per pound....	185
6.	B.t.u.'s per pound of steam delivered by driers (4)—(5).....		992
7.	Pounds water per hour by condensate meter.....		8,725
8.	Pounds water per hour by vacuum pump meter.....		410
9.	Total pounds of condensate by driers per hour (7)+(8).....		9,135
10.	Temperature of cooling water for vacuum pump deg. F.....		62
11.	Pounds condensate per hour equivalent to heat supplied by drier pit supply heater (from heater data)		1,060
12.	Pounds condensate per hour by driers and pit supply heater (9)+(11)		10,195
13.	B.t.u.'s delivered per hour by pit supply heater (See note).....		1,110,000
14.	B.t.u.'s delivered per hour by driers (9)×(6)		9,060,000
15.	B.t.u.'s delivered per hour by driers and heater (13)+(14)...		10,170,000
16.	B.t.u.'s delivered per hour by main supply fan (See note).....		972,000
17.	B.t.u.'s delivered by adjacent rooms (See note).....		800,000
18.	Total B.t.u.'s delivered per hour to machine room (15)+(16)+(17)		11,942,000

Note: Referred to outside temperature of 58 deg. F.

1.	Paper machine No. 4		
2.	Date: May 15, 1930	Time: 9:00 A.M. to 4:15 P.M.	
3.	Steam supply—pounds gage....10.6	Temp. deg. F.....	240
4.	Quality .....saturated	B.t.u.'s per pound....	1,161
5.	Condensate temp. deg. F.....216	B.t.u.'s per pound....	184
6.	B.t.u.'s per pound of steam delivered by driers (4)—(5).....		977
7.	Pounds water per hour by condensate meter		10,200
8.	Pounds water per hour by vacuum pump meter		545
9.	Total pounds of condensate by driers per hour (7)+(8).....		10,745
10.	Temperature of cooling water for vacuum pump deg. F.....		62
11.	Pounds condensate per hour equivalent to heat supplied by drier pit supply heater (from heater data).....		460
12.	Pounds condensate per hour by driers and pit supply heater (9)+(11)		11,205
13.	B.t.u.'s delivered per hour by pit supply heater (See note).....		430,000
14.	B.t.u.'s delivered per hour by driers (9)×(6)		10,500,000
15.	B.t.u.'s delivered per hour by driers and heater (13)+(14)....		10,930,000
16.	B.t.u.'s delivered per hour by main supply fan (See note).....		1,280,000
17.	B.t.u.'s delivered per hour by adjacent rooms (See note).....		1,068,000
18.	Total B.t.u.'s delivered per hour to machine room (15)+(16)+(17)		13,278,000

Note: Refered to outside temperature of 58 deg. F.

Results

Note: Refer to charts for more complete results.

Paper machine No. 3

Date: May 15, 1930	Time: 9:00 A.M. to 4:15 P.M.
Kind of paper .....20 pound sulphite bond (500—17x22 basis)	
Pounds paper dried per hour	3400
Pounds water evaporated per pound paper	2.1
Pounds water evaporated per hour	7120
Pounds steam used in driers per pound paper	2.69
Pounds steam used in heaters per pound paper	.85
Pounds steam used in driers per pound water evaporated	1.29
* Pounds steam used in heaters per pound water evaporated	.41
Total pounds steam used per pound water evaporated	1.70
B.t.u.'s absorbed in driers per pound water evaporated	1270
* B.t.u.'s absorbed in heaters per pound water evaporated	406
Total B.t.u.'s absorbed per pound water evaporated	1676
Theoretical B.t.u.'s required per pound water evaporated	1100
Thermal efficiency of drying operation in per cent (See note **)..	65
Total area of drier surface in square feet	3420
Effective area of drier surface in square feet	2400
Pounds of water evaporated per square foot of total area	2.08
Pounds of water evaporated per square foot of effective area	2.97
Pounds of paper dried per square foot of total area	.95
Pounds of paper dried per square foot of effective area	1.42

Paper machine No. 4	
Date: May 15, 1930 Time: 9:00 A.M. to 4:15 P.M	
Kind of paper: .....20 pound sulphite bond (500—17x22 basis)	
Pounds paper dried per hour	4260
Pounds water evaporated per pound paper	2.17
Pounds water evaporated per hour	9250
Pounds steam used in driers per pound paper	2.52
Pounds steam used in heaters per pound paper	.75
Pounds steam used in driers per pound water evaporated	1.15
* Pounds steam used in heaters per pound water evaporated	.31
Total pounds steam used per pound water evaporated	1.46
B.t.u.'s absorbed in driers per pound water evaporated	1130
* B.t.u.'s absorbed in heaters per pound water evaporated	306
Total B.t.u.'s absorbed per pound water evaporated	1436
Theoretical B.t.u.'s required per pound water evaporated	1075
Thermal efficiency of drying operation in per cent (See note **)	75
Total area of drier surface in square feet	4350
Effective area of drier surface in square feet	2920
Pounds of water evaporated per square foot of total area	2.13
Pounds of water evaporated per square foot of effective area	3.17
Pounds of paper dried per square foot of total area	.97
Pounds of paper dried per square foot of effective area	1.46

* Includes drier pit supply heater, room air supply heater and air from adjacent rooms.

** The thermal efficiency of drying operation is given as 65.5 per cent for No. 3 machine and 75 per cent for No. 4 machine. All the heat which was supplied and could be measured or calculated was taken into consideration in obtaining these efficiencies. The heat balance shows, however, that 10.7 per cent more heat left the paper machine room than the measured supply. If we use the quantities of outgoing heat to calculate the efficiencies, we obtain 60 per cent for No. 3 paper machine and 70 per cent for No. 4 paper machine.

The Evaluation of European Pulps*

(A Preliminary Report)

By Warren F Moore[1] and William R. Willets[2]

Introduction

Some years ago Schwalbe and Becker published analytical data on the composition of some 57 varieties of European pulps (cf. Paper, Vol. 27, No. 25, pp. 20-23, 32, February 23, 1921). This work was of great value to American investigators as it allowed them to compare, chemically, domestic and foreign pulps.

In order to furnish additional background for pulp comparisons, the work herein reported was undertaken as a part of the extensive program of the TAPPI pulp testing committee. In addition to the chemical investigations, physical tests were made using the new tentative standard beater method (cf. Paper Trade Journal, Vol. 90, No. 8, p. 264, February 20, 1930). As a matter of fact, most of the data are physical as time did not permit us to complete the chemical tests.

All the tests were made on well known brands of European krafts and sulphites, since this work was undertaken as an aid to practical, rather than to theoretical knowledge. As soon as possible chemical tests on these pulps will be completed, and similar physical and chemical data obtained for characteristic domestic pulps.

In the course of the work, interesting though incomplete results were obtained on the beating characteristics of pulps that had been previously oven dried, on the blending of fast and slow hydrating pulps, and on the strength properties of old and new lots of pulp of the same brand.

Method

The beating procedure employed was the new TAPPI tentative standard in which a 1½ pound controlled bedplate beater is used (cf. Paper Trade Journal, Vol. 90, No. 8, p. 264, February 20, 1930). Freeness tests were made with a Williams apparatus. All strength tests were made at 65 per cent relative humidity and 70 deg. F.

Alpha cellulose analyses were made by treating 5 grams of air dry pulp with 75 cc. of 17.5 per cent caustic soda at 28 deg. C. The sample was torn into small pieces, macerated with the alkali for 5 minutes and then allowed to stand for an additional 25 minutes, making a total mercerizing period of 30 minutes. The pulp was then filtered through a Buchner funnel three times to prevent fiber loss, and washed with 500 c.c. of warm distilled water using suction, followed by a treatment with 50 c.c. of 10 per cent acetic acid (without suction). The pulp was then washed with an additional 250 c.c. of warm distilled water. To facilitate drying, 50 c.c. of alcohol and petrolic ether were used successively after the final washing out of the acid.

The pulp was then dried to constant weight in a tared weighing bottle.

In determining the ether and alcohol soluble matter, 2.5 grams of air dry pulp were placed in a modified Soxhlet apparatus together with the specified solvent (ether or alcohol), and extracted for two hours. The solvent was then distilled to small volume and the contents of the flask transferred to a small weighing beaker. The flask was rinsed with the specified solvent, the washings being added to the contents of the beaker. Evaporation was continued until the odor of the solvent was no longer noticeable and the beaker then placed in an oven for one hour at 100 deg. C., cooled in a dessicator and weighed.

The pH values were obtained by macerating 5 grams of air dry pulp with 250 c.c. of distilled water in a 400 c.c. beaker. The contents of the beaker were then warmed to 90 deg. C. for one hour and pH values determined on the solution using colorimetric methods. Because of the well-known difficulties involved in determining the pH of unbuffered solutions, these values are probably rather inaccurate.

* Presented at the fall meeting of TAPPI, Erie, Pa., 3-5, 1930.

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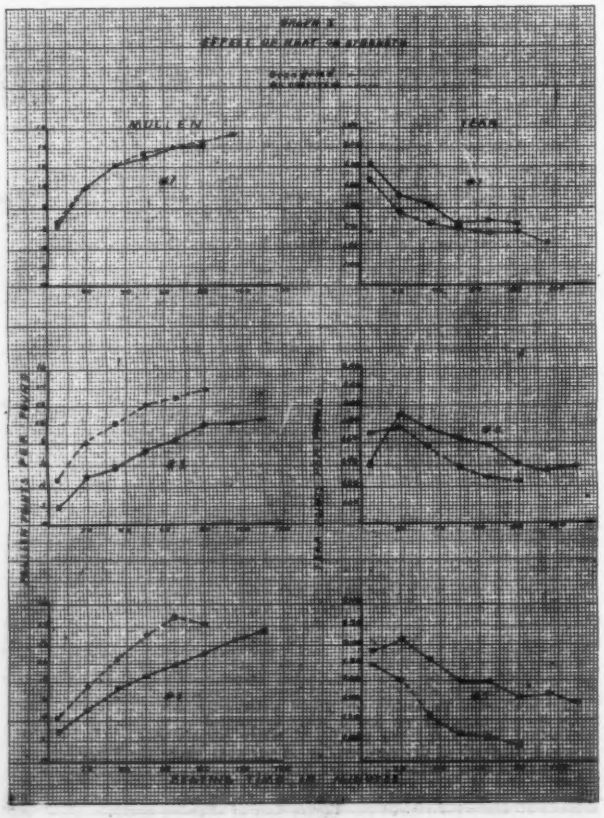


GRAPH I

Calculation of Results

The "Mullen points per pound" was obtained by dividing the average pop by the weight of a standard ream 25 x 40 — 500. The "tear points per pound" was similarly calculated using the average tearing value. The "beater value" was obtained by the widely used formula:

$$\frac{\text{Mullen} + \frac{\text{Elmendorf Tear}}{2}}{2}$$

generally abbreviated:

$$\frac{M + E/2}{2}$$

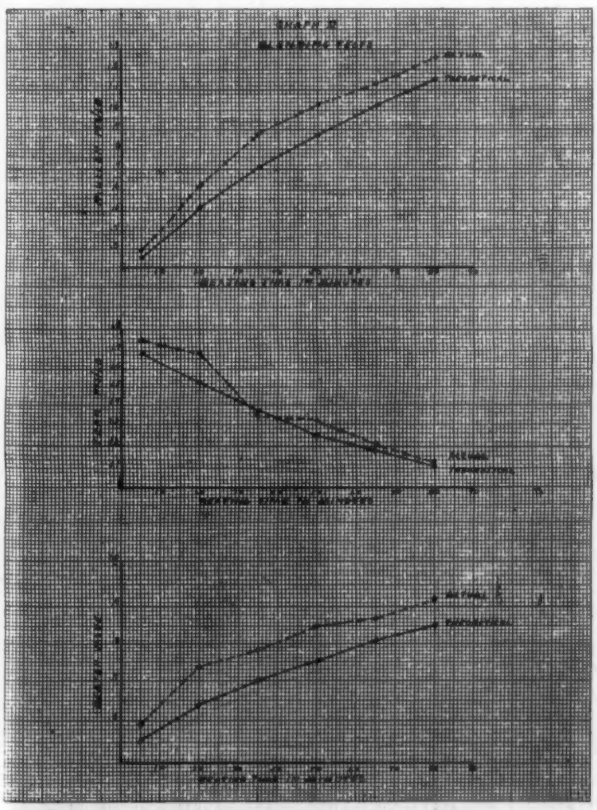
The basis weight of all test sheets was approximately 60 pounds (25 x 40 — 500).

Effect of Oven Drying Pulp

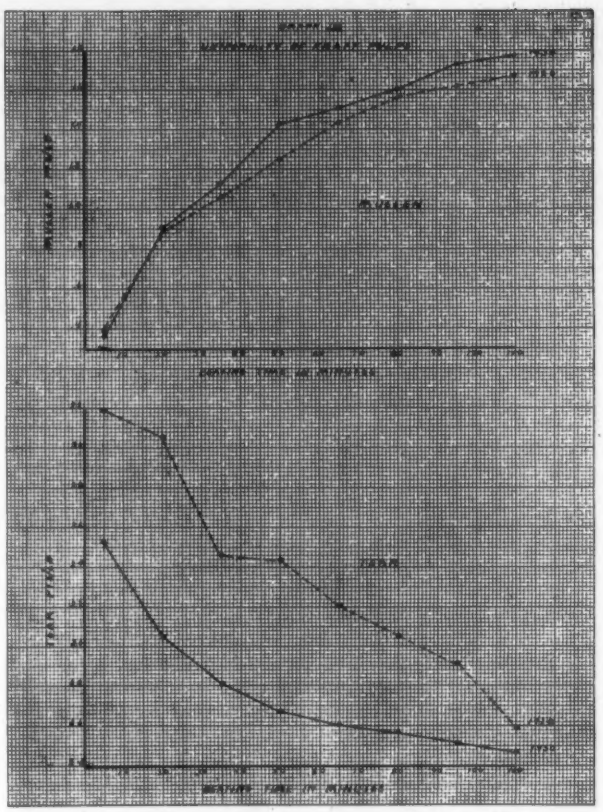
In each case a portion of the sample was thoroughly oven dried before beating and the remainder beaten in the air dry condition. The results are incorporated in Table I and curves for Mullen and tearing strengths plotted in Graph I.

In the case of pulp No. 1, a kraft, little difference was found between the oven dried and the air dry samples, in fact the differences are within the experimental error of the procedure, less than 10 per cent in most cases.

Pulp No. 2, an unbleached sulphite, and pulp No. 3, a kraft, showed very considerable differences in that the oven dried samples hydrated less readily and had considerably lower bursting strengths. However, the tearing strength in each case was considerably higher for the oven dried than for the air dry sample. In general, fast hydrating pulps show high Mullen strengths, with correspondingly low tearing values.



GRAPH II



GRAPH III

Effect of Blending Fast and Slow Hydrating Pulps

Two unbleached sulphites were beaten together in the ratio of 75 parts of the slow hydrating (No. 4) to 25 parts of the fast hydrating (No. 5). Each pulp was then tested independently and theoretical values for the 75-25 mixture calculated. In general these theoretical values checked the actual values within the experimental error of the method (about 10 per cent), in a very few cases the difference was somewhat greater. The tearing values especially checked very closely.

In spite of the discrepancies between theoretical and actual values the possibilities of blending pulps to secure fairly definite characteristics, knowing the physical behaviour of each, seem rather promising. Naturally, too much emphasis should not be placed on a single test but the indications are interesting.

(The data are summarized in Table II and the theoretical and actual results of the blend are shown graphically in Graph II.)

Uniformity of New and Old Lots of the Same Brand

One of these krafts (No. 6) was received in 1928, the other (No. 7) in 1930, but supposedly there was no difference between them. Both were tested this year under identical conditions.

Although the 1928 pulp had the lower initial freeness, the slope of the curve for the 1930 pulp was considerably steeper. Consequently it is not surprising to find that the 1930 pulp had the higher Mullen and the lower tearing values. While no hard and fast rule can be laid down, it is generally true that fast hydrating pulps have higher Mullen and lower tearing strengths than slow hydrating pulps of the same general type.

(The data are summarized in Table III and the Mullen and tear curves plotted in Graph III.)

Tests on Miscellaneous Sulphite Pulps

The data are tabulated in Table IV. On the bleached pulp (No. 8) it will be seen that the second test checked the first

rather closely at all points. This was also true of unbleached pulp No. 12. All of the unbleached pulps were considerably stronger than the bleached sample. In general the faster hydrating pulps had higher Mullen and lower tearing strengths than the slower hydrating samples. Pulp No. 13 was an exception in the case of the Mullen tests, while it was a slow hydrating pulp the bursting strength was high. In no case was a maximum Mullen value reached as beating could not be carried out after the removal of six or seven samples since circulation virtually ceased, due to a greatly lessened volume in the beater and increased slowness.

All the pulps tested had rather similar alpha cellulose contents, from 86.3 to 87.5 per cent. Both pulps tested for ether solubility had the same amount of ether-soluble matter, 1.4 per cent. The pH values are probably not very accurate as no special precautions were used to secure absolutely CO_2-free water.

Tests of Miscellaneous Kraft Pulps

The data are tabulated in Table V. Unfortunately no chemical tests could be made because of lack of time.

In cases where duplicate tests were made (Nos. 15 and 18) the results check each other closely. It will be noticed that the kraft pulps, as a class, hydrated more slowly than the sulphite pulps and had higher Mullen and tearing values. This is not inconsistent with the statement made previously that slow hydrating pulps have lower Mullen strengths than fast hydrating pulps of the same type, as sulphite and kraft pulps are of widely different types.

Summary and Conclusions

1. Strength data are given for 21 well known brands of European pulps, including one bleached sulphite, nine unbleached sulphites and eleven krafts. In a few cases chemical analyses of the sulphite pulps are given.

2. In the cases investigated, oven drying the pulps before beating lowered their rates of hydration and bursting strengths, and increased the tearing values.

3. The actual results obtained by beating together a fast and a slow hydrating pulp checked the theoretical values fairly closely. The difference between the actual and theoretical tearing strength, especially, was very small. The possibility of blending two pulps of known physical behaviors to obtain a stock having definite strength characteristics is clearly indicated.

4. Two pulps of the same brand, one received in 1928, the other in 1930, were tested. The 1930 pulp was found to have a higher Mullen strength and considerably lower tearing values than the 1928 sample.

5. In general, if two pulps are of a similar type, the faster hydrating will have a higher and steeper Mullen curve and a lower tearing curve than the slower hydrating pulp.

6. The kraft pulps hydrated more slowly than the sulphite pulps. Their tearing and Mullen strengths were considerably higher than those of the sulphite pulps.

7. The 1½ pound controlled bedplate beater was found relatively unsatisfactory for use under the present procedure where anything like complete testing data were desired. In general after the first six or seven samples had been removed, the circulation ceased because of the greatly lessened volume of stock in the beater and the increased hydration of the pulp. For this reason the maximum Mullen strength was not reached in any case. In control testing where only a few samples (at widely separated time intervals) are desired the apparatus may give satisfaction. However, if it is desired to follow the beating curve closely, with a proportionate number of samples, the beater should have a larger capacity. Although we have obtained check results in several cases, it is highly questionable whether it is possible to maintain the beating tackle sufficiently constant to secure strictly comparable results.

Acknowledgements

The experimental work herein reported was performed in the laboratories of the United States Testing Company, 316 Hudson Street, New York City. The pulp samples were furnished through the courtesy of Bulkley, Dunton and Company, the Stora-Kopparberg Corporation and Parsons and Whittemore, all of New York City.

The writers wish to thank their respective employers for permission to publish this paper.

TABLE I

EFFECT OF HEAT ON STRENGTH

Tests on Pulps Oven Dried and Air Dried before Beating.

			Beaten as Received				Beaten after Oven Drying			
Pulp No.	Kind	Beating Time Min.	Freeness C.C.	Mullen pts./lb.	Tear pts./lb.	Beater Value M+E/2 2	Freeness C.C.	Mullen pts./lb.	Tear pts./lb.	Beater Value M+E/2 2
1	Kraft	5	760	0.66	1.88	0.80	785	0.64	2.05	0.83
	(Moist.	20	750	1.00	1.57	0.89	755	1.00	1.73	0.93
	12.9%)	35	725	1.23	1.43	0.97	730	1.23	1.66	1.03
		50	700	1.35	1.47	1.04	710	1.29	1.46	1.01
		65	680	1.40	1.37	1.04	630	1.41	1.49	1.08
		80	620	1.46	1.39	1.08	595	1.42	1.46	1.07
		95	555	1.54	1.27	1.09	...	...	...	...
		110	...	...	...	...	...	...	...	...
2	Un-	5	765	0.48	1.71	0.67	780	0.20	1.40	0.45
	bleached	20	690	0.81	1.76	0.85	745	0.50	1.89	0.72
	Sulphite	35	645	1.05	1.56	0.92	720	0.59	1.75	0.73
	Same	50	555	1.21	1.39	0.95	700	0.72	1.64	0.77
	make as	65	455	1.30	1.30	0.98	660	0.83	1.58	0.81
	No. 1	80	350	1.39	1.27	1.01	615	0.99	1.41	0.85
	(Moist.	95	...	...	...	...	580	1.01	1.36	0.85
	13.16%)	110	...	...	...	...	535	1.06	1.40	0.88
3	Kraft	5	770	0.43	1.78	0.61	795	0.29	1.94	0.61
	Different	20	710	0.76	1.61	0.79	775	0.52	2.07	0.78
	make	35	655	1.06	1.24	0.84	720	0.73	1.84	0.83
	than	50	550	1.33	1.08	0.94	685	0.88	1.58	0.84
	above	65	475	1.49	1.04	1.01	640	1.00	1.60	0.90
	(Moist.	80	275	1.42	0.97	0.96	590	1.13	1.43	0.92
	10%)	95	...	...	...	...	520	1.27	1.45	1.00
		110	...	...	...	...	445	1.35	1.39	1.02

TABLE II

BLENDING TESTS

Tests showing the blending of slow and fast hydrating unbleached sulphites.

Beating Time (minutes)	Freeness in cc.	Mullen pts./lb.	Tear pts./lb.	Beater Value M+E/2 2
		Pulp No. 4 (100%)		
5	780	0.18	1.67	0.51
20	745	0.42	1.53	0.60
35	705	0.58	1.39	0.64
50	690	0.70	1.31	0.68
65	655	0.88	1.26	0.76
80	620	1.03	1.15	0.81
95	555	0.98	1.09	0.77
110	440	0.98	1.20	0.79
		Pulp No. 5 (100%)		
5	735	0.46	1.70	0.66
20	700	0.80	1.51	0.78
35	600	1.11	1.30	0.88
50	525	1.27	1.12	0.92
65	380	1.44	1.00	0.97
80	260	1.49	0.99	1.00
		Furnish 75% of No. 4 + 25% of No. 5 Pulp		
		Calculated theoretical values		
5	769	0.25	1.68	0.55
20	734	0.52	1.53	0.64
35	679	0.71	1.37	0.70
50	648	0.87	1.25	0.75
65	586	1.02	1.19	0.81
80	520	1.15	1.11	0.85
		Actual values		
5	795	0.29	1.75	0.59
20	760	0.62	1.69	0.74
35	705	0.88	1.34	0.78
50	665	1.03	1.32	0.85
65	590	1.13	1.21	0.87
80	525	1.26	1.13	0.92
95	430	1.42	1.08	0.98

TABLE III

UNIFORMITY OF KRAFT PULPS

Tests on new and old kraft pulps of the same brand.

Beating Time (minutes)	Freeness in cc.	Mullen pts./lb.	Tear pts./lb.	Beater Value M+E/2 2
		No. 6 Pulp received 1928, tested 1930		
5	775	0.39	3.19	1.00
20	745	0.78	3.06	1.16
35	715	1.06	2.46	1.15
50	685	1.24	2.44	1.23
65	645	1.43	2.20	1.27
80	590	1.56	2.05	1.30
95	530	1.61	1.91	1.29
110	475	1.67	1.59	1.24
		No. 7 Pulp received and tested 1930		
5	800	0.37	2.53	0.82
20	785	0.90	2.05	0.97
35	730	1.13	1.80	1.02
50	685	1.42	1.67	1.13
65	620	1.51	1.60	1.16
80	565	1.60	1.57	1.20
95	485	1.72	1.51	1.24
110	400	1.77	1.47	1.26

TABLE IV

TESTS ON SULPHITE PULPS, 1930

Pulp No.	Description	Beating time (min.)	Freeness in cc.	Mullen, pts./lb.	Tear, pts./lb.	Beater value $\frac{M+E/2}{2}$	Chemical Analyses: Moisture, per cent	Alpha cellulose, p.c.	Ether sol., per cent	EtOH sol., per cent	pH
8	Bleached	5	775	0.43	1.92	0.70	13.1	86.3	...	...	...
		20	725	0.60	1.47	0.67					
		35	595	0.74	1.36	0.71					
		50	525	0.83	1.15	0.70					
		65	445	0.87	1.15	0.72					
		80	410	0.93	1.10	0.74					
8-A	Check test on No. 8	5	725	0.45	1.89	0.70	13.1	86.3	...	...	...
		20	660	0.60	1.54	0.68					
		35	585	0.70	1.19	0.65					
		50	555	0.83	1.23	0.72					
		65	455	0.91	1.20	0.75					
		80	370	0.95	1.21	0.78					
9	Unbleached	5	735	0.51	1.92	0.74	7.9	87.5	1.4	...	5.3
		20	685	0.80	1.41	0.75					
		35	600	1.06	1.26	0.85					
		50	515	1.21	1.06	0.87					
		65	375	1.35	1.06	0.94					
		80	300	1.44	1.06	0.99					
10	Unbleached			No strength tests			6.2	86.7	1.4	0.7	...
11	Unbleached	5	750	0.26	1.65	0.55	10.0	...	...	...	4.7
		20	715	0.65	1.49	0.70					
		35	660	1.00	1.45	0.87					
		50	580	1.22	1.40	0.96					
		65	460	1.33	1.36	1.01					
		80	390	1.36	1.31	1.01					
		95	205	1.39	1.20	1.00					
12	Unbleached	5	770	0.22	1.67	0.53	10.8	...	...	...	...
		20	725	0.52	1.72	0.69					
		35	645	0.76	1.43	0.74					
		50	555	1.11	1.36	0.90					
		65	415	1.29	1.20	0.95					
		80	330	1.36	1.11	0.96					
		95	270	1.33	1.04	0.93					
12-A	Check test on No. 12	5	785	0.35	1.74	0.61	10.8	...	...	...	...
		20	720	0.59	1.57	0.69					
		35	670	0.78	1.51	0.77					
		50	615	0.99	1.48	0.87					
		65	505	1.10	1.37	0.90					
		80	430	1.18	1.12	0.87					
		95	275	1.25	1.08	0.90					
13	Unbleached	5	795	0.39	1.91	0.65	10.0	...	...	...	...
		20	735	0.65	2.04	0.84					
		35	695	0.82	1.90	0.94					
		50	655	1.04	1.70	0.95					
		65	595	1.16	1.71	0.98					
		80	530	1.33	1.54	1.05					
		95	430	1.37	1.45	1.05					
14	Unbleached	5	750	0.51	2.06	0.77	10.0	...	...	...	...
		20	705	0.80	1.83	0.86					
		35	645	1.04	1.71	0.85					
		50	590	1.19	1.58	0.99					
		65	520	1.28	1.43	1.00					
		80	430	1.39	1.43	1.06					

TABLE V

TESTS ON KRAFT PULPS, 1930

Pulp No.	Description	Beating Time (min.)	Freeness in cc.	Mullen pts./lb.	Tear pts./lb.	Beater Value $\frac{M+E/2}{2}$	Moisture per cent
15	Kraft	5	785	0.68	2.68	1.01	13.7
		20	770	1.06	2.00	1.03	
		35	740	1.25	1.81	1.08	
		50	725	1.40	1.74	1.13	
		65	700	1.53	1.73	1.20	
		80	655	1.66	1.61	1.23	
15-A	Kraft Check test on No. 15	5	800	0.58	2.56	0.93	13.7
		20	755	0.97	2.19	1.03	
		35	745	1.20	2.07	1.12	
		50	725	1.41	1.88	1.17	
		65	705	1.51	1.70	1.18	
		80	670	1.64	1.54	1.20	
16	Kraft Same brand as No. 15 but different shipment	5	800	0.50	3.18	1.05	15.3
		20	770	0.82	2.66	1.08	
		35	750	1.08	2.27	1.11	
		50	735	1.26	2.10	1.16	
		65	710	1.34	2.04	1.18	
		80	690	1.46	1.88	1.20	
17	Kraft Same make as No. 15 but different brand	5	785	0.53	3.02	1.02	23.2
		20	765	0.90	2.56	1.34	
		35	745	1.11	2.29	1.13	
		50	725	1.24	2.12	1.15	
18	Kraft	5	795	0.35	2.04	0.69	10.0
		20	785	0.70	2.63	1.01	
		35	750	...	3.06	...	
		50	745	1.21	2.33	1.19	
		65	720	1.28	2.13	1.17	
		80	700	1.39	2.03	1.21	
		95	680	1.43	2.04	1.23	
		110	625	1.58	1.84	1.25	
19	Kraft	5	805	0.47	2.54	0.87	11.0
		20	775	0.81	2.54	1.04	
		35	755	1.03	2.07	1.04	
		50	725	1.19	2.06	1.11	
		65	695	1.31	1.99	1.16	
		80	685	1.39	1.84	1.11	
		95	620	1.48	1.84	1.20	
		110	590	1.55	1.80	1.23	
20	Kraft Very light (almost straw) color	5	775	0.58	2.76	0.98	15.6
		20	730	0.88	2.47	1.06	
		35	710	1.09	2.03	1.06	
		50	675	1.21	1.90	1.08	
21	Kraft Same make as No. 20 only different brand, regular kraft color	5	785	0.58	3.23	1.10	9.3
		20	780	0.86	2.77	1.13	
		35	765	1.09	2.50	1.17	
		50	745	1.20	2.06	1.12	
		65	720	1.28	2.15	1.18	
		80	685	1.37	1.96	1.18	

Isolation of Cellulose by Chlorination Method*

I. Apparatus

A special chlorination apparatus as illustrated in Fig. 1 is required for this determination. It consists of one leveling tube and holder, two individual glass 3-way stopcocks, one thermometer, one Hempel precision gas burette fitted with a 3-way stopcock, a glass water jacket for the gas burette, one Hempel gas pipette, several Jena glass crucibles (No. 3, 35 cc. capacity) equipped with a fritted glass crucible of porosity 5 or 7. In addition, alundum crucibles with about the same capacity and of porosity R. A. 98 are required.

II. Test Specimen

The specimen shall consist of about 2 grams of a representative sample of oven-dry, alcohol-benzene extracted disintegrated wood or unextracted pulp.

The samples of wood or pulp for analysis shall be prepared according to the procedures described in the official methods.

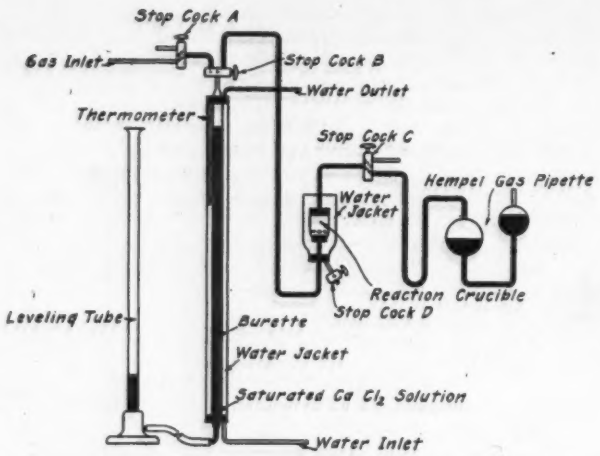
III. Method

Approximately two grams of air-dry wood or pulp are weighed in a tared alundum crucible contained in a weighing bottle and dried in an electric oven for 3½ hours at 105 deg. C. The crucible is placed outside of the bottle during drying, after which it is returned to the stoppered bottle, cooled in a desiccator, and reweighed to obtain the weight of oven-dry material.

The crucible with contents, in the case of wood (the extraction may be dispensed with in the case of pulps) is extracted 6 hours or over night if more convenient in a Soxhlet extractor with a mixture of alcohol and benzene, as described under the alcohol-benzene determination. After evaporation of the solvent the sawdust is thoroughly washed with hot water using the suction pump. The moist material is then transferred to a Jena glass crucible. Suction is applied first at the bottom of the crucible until the excess moisture is removed, and then at the top. The latter removes the water from the fritted glass plate and evenly distributes the remaining moisture throughout the entire sample. The crucible is water jacketed and connected between the gas burette and the gas pipette, as shown in Fig. 1, by means of two rubber stoppers through which passes a capillary glass tubing.

A burette full of chlorine gas is passed from the burette up through the material in the crucible and over into the gas pipette as fast as possible. The temperature of the water in the water jacket should be in the range of 23.5 to 32 inclusive. During the first chlorination, samples of wood absorb approximately 230 cc. of chlorine gas at room temperature and atmospheric pressure; this necessitates refilling the burette, which may be done quickly as it is connected to a chlorine tank with a 3-way stop cock. The

* Presented at the fall meeting of TAPPI, Erie, Pa., Sept. 3-5, 1930, as a tentative official TAPPI standard method by the pulp testing committee.



APPARATUS FOR THE DETERMINATION OF CHLORINE ABSORPTION AND THE ISOLATION OF CELLULOSE.

first chlorination treatment requires from three to four minutes, after which the crucible is removed from the apparatus and the material washed with approximately 50 cc. of distilled water, and successively with 50 cc. of approximately 3 per cent SO_3 water, 50 cc. water, then 50 cc. of freshly prepared 2 per cent sodium sulphite solution. The material is transferred to a 250 cc. Pyrex beaker using a pointed glass rod. The last traces of material are washed out of the crucible with 100 cc. of a 2 per cent solution of sodium sulphite with the aid of a rubber policeman drawn gently over the bottom of the crucible.

Approximately 15 cc. portions of the above solution are added to the crucible for each washing. When 60 cc. have been thus used, 10 cc. portions of the remainder are placed in a watch glass and by means of applying gentle suction to the top of the crucible, placed on the watch glass as before described, all of the material is removed from the fritted glass bottom of the crucible. The beaker containing the samples is covered with a watch glass and placed in a boiling water bath for 30 minutes. The fibers are again transferred to the glass crucible and washed with about 250 cc. of distilled water. The above procedure is never sufficient to remove all the lignin so that the treatment with chlorine and subsequent treatments as outlined above are repeated until the fibers show only a very faint tinge of pink upon addition of the sodium sulphite solution. The second and following treatments with chlorine should not require more than two or three minutes. Prolonged action chlorine gas together with the hydrochloric acid formed in the secondary reactions, hydrolyzes the cellulose, gives low yields, and causes varying amounts of alpha-cellulose.

After all of the lignin has been removed, the fibers are thoroughly washed in the alundum crucible successively with 500 cc. of hot water, 50 cc. of 95 per cent alcohol and finally with 50 cc. of ether. It is then dried for 2½ hours at 105 deg. C. in the electrically heated oven.

The tared alundum crucible is again placed in the original stoppered weighing bottle, cooled in a desiccator over concentrated sulphuric acid and weighed as cellulose.

IV. Report

The weight of the residue shall be reported as a percentage of the oven-dry weight of unextracted material.

V. Solutions

1. Alcohol-benzene. This solution consists of 33 per cent alcohol and 67 per cent benzene by volume.

2. Calcium chloride solution for gas burette and gas pipette: Saturate a solution with calcium chloride at room temperature and bubble chlorine gas in until saturated and filter for use. When the apparatus is not in use it is well to have it it filled with fresh chlorine gas, thus keeping the calcium chloride solution saturated.

VI. References

Roe. J. Ind. Eng. Chem. *16*, 8 (1924).

Bray and Andrews, Paper Trade J. *76*, No. 8.(Feb. 22, 1923).

U. S. Forest Products Laboratory Standard Testing Manual for Pulpwood, Pulp, Stuff, and Paper.

Chlorine Consumption of Pulp*

This value obtainable during the isolation of cellulose is a measure of the amount of chlorine gas actually consumed by compounds in the pulp other than cellulose. Such values for a series of pulps indicate the relative bleachabilities of the pulps and with a sufficient background of data can be used to predict actual bleachabilities.

I. Apparatus

The special chlorination apparatus as described in the procedure for the isolation of cellulose is required.

II. Specimen

A specimen such as described in the above procedure shall be used.

III. Method

The procedure used for the isolation of cellulose shall be followed as described, including the additional steps. About 90 cc. of chlorine gas are run into the gas burette and the exact amount noted, after which the entire amount of gas is passed up through the sample and over into the gas pipette. The unconsumed gas then runs back into the gas burette and the exact amount noted. By difference, the total volume of gas used is obtained. When the Jena glass crucible containing the chlorinated sample is placed in the suction filter flask the pulp is washed with 4.25 cc. portions of water at a temperature of 18-23 deg. C. This filtrate is retained in a properly labeled and covered beaker.

At each successive chlorination the above procedure is repeated and the total volume of chlorine used is corrected to standard conditions of temperature and pressure i.e. 0 deg. C. and 760 mm., taking into consideration the vapor pressure of chlorine gas at the chlorination temperature over a saturated calcium chloride solution saturated with chlorine gas. This calculation is made by means of the following formula:

$$V_o = \frac{V_t \times (p - a)}{760\ (1 + 0.00367 \times t)}$$

The following table is of assistance in making these calculations.

t deg. C.	a	760 × (1 + 0.00367 × t)
23.5	15.9	826.00
24.0	16.6	826.90
24.5	17.3	828.36
25.0	18.0	829.76
26.0	19.4	832.57
26.5	20.0	833.80
27.0	20.8	835.40
28.0	22.0	838.12
29.0	23.5	840.96
30.0	25.0	843.66
31.0	26.4	846.48
32.0	29.0	849.30

The weight of 1 cc. of chlorine gas at standard temperature and pressure = 0.003164 gms.

The combined initial wash waters are titrated with standard alkali to determine the weight of chlorine gas that formed hydrochloric acid.

By difference the weight of chlorine actually consumed by the pulp is then determined.

IV. Report

The data shall be reported as the percentage of chlorine consumed as calculated on the oven-dry unextracted weight of the sample.

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* Presented at the fall meeting of TAPPI, Erie, Pa., Sept. 3-5, 1930, as a tentative official TAPPI standard method by the pulp testing committee.

Where V_o = volume under standard conditions.
a = vapor pressure of chlorine gas over calcium chloride solution saturated with chlorine gas.
t = the temperature of chlorination.
p = observed barometric pressure.

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Wall paper	27 bls., 5 cs.
Paper hangings	4 bls., 8 cs.
News print	3886 rolls
Printing paper	49 cs.
Packing paper	13 cs.
Wrapping paper	1 roll, 27 bls., 12 cs.
Filter paper	72 cs.
Surface coated paper	49 cs.
Metal paper	13 cs.
Tissue paper	10 cs.
Decalcomania paper	29 cs.
Photo paper	1 cs.
Writing paper	13 cs.
Cellophane paper	7 cs.
Aluminum paper	9 cs.
Wafer paper	13 cs.
Bowl paper	16 bls.
Miscellaneous paper	332 rolls, 153 bls., 163 cs.

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Japan Export & Import Commission Co., Toyama Maru, Kobe, 10 cs.

H. Reeve Angel & Co., Inc., Gripsholm, Gothenburg, 23 bls., 12 cs.

The Borregaard Co., Inc., Gripsholm, Gothenburg, 332 rolls.

M. M. Cohen, Gripsholm, Gothenburg, 32 bls.

Kraemer & Co., Gripsholm, Gothenburg, 98 bls.

E. H. Sargent & Co., Gripsholm, Gothenburg, 1 cs.

Japan Paper Co., Gripsholm, Gothenburg, 3 cs.

Irving & Co., Tai Yin, Yokohoma, 12 cs.

D. F. Young, Yorck, Bremen, 8 cs.

T. N. Fairbanks, France, Havre, 2 cs.

Globe Shipping Co., France, Havre, 5 cs.

Standard Products Corp., France, Havre, 65 cs.

Globe Shipping Co., De Grasse, Havre, 6 cs.

Meadows, Wye & Co., De Grasse, Havre, 2 cs.

Cheramy, Inc., De Grasse, Havre, 7 cs.

Guibout, Freres, De Grasse, Havre, 13 cs.

T. D. Downing & Co., Resolute, Hamburg, 4 cs.

Rohner, Gehrig & Co., Resolute, Hamburg, 2 cs.

RAGS, BAGGINGS, ETC.

G. M. Graves Co., Cameronia, Glasgow, 389 bls. paper stock.

T. D. Downing & Co., Cameronia, Glasgow, 81 bls. paper stock.

R. M. Gray, Inc., Hohenstein, Gdynia, 152 bls. flax waste.

——, Hohenstein, Gdynia, 48 bls. rags.

Marine Trust Co., Hohenstein, Gdynia, 50 bls. bagging.

1st National Bank of Boston, Hohenstein, Gdynia, 81 bls. flax waste.

E. J. Keller Co., Inc., Hohenstein, ——, 55 bls. rags.

Arkus, Inc., Kerhinkson, Dublin, 16 bls. rags.

Darmstadt, Scott & Courtney, N. Amsterdam, Rotterdam, 43 bls. cotton waste.

Amtorg Trading Corp., Skule, Leningrad, 2554 bls. rags.

Castle & Overton, Inc., Tomalva, Rotterdam, 2 bls. rags.

Darmstadt, Scott & Courtney, Tomalva, Rotterdam, 36 bls. rags.

E. J. Keller Co., Inc., Tomalva, ——, 45 bls. rags.

Guaranty Trust Co., Mercier, Antwerp, 159 bls. rags.

S. Birkenstein & Sons, London, Corporation, London, 144 bls. paper stock.

Banco Com'l Italiane Trust Co., Carnia, Genoa, 200 bls. bagging.

——, Hinnoy, Barcelona, 70 bls. bagging.

S. Birkenstein & Son, Hinnoy, Valencia, 76 bls. rags.

E. J. Keller Co., Inc., Roussillon, ——, 46 bls. rags.

OLD ROPE

Brown Bros. & Co., Kerhonkson, Cardiff, 57 coils.

Darmstadt, Scott & Courtney, N. Amsterdam, Rotterdam, 48 coils.

International Trust Co., N. Amsterdam, Rotterdam, 48 coils.

International Trust Co., Hinnoy, Barcelona, 39 coils.

WOOD PULP

Johanson, Wales & Sparre, Inc., Gripsholm, Gothenburg, 1125 bls. sulphate.

Parsons & Whittemore, Inc., Gripsholm, 750 bls. sulphite; 1260 bls. sulphate.

E. M. Sergeant Co., Gripsholm, Gothenburg, 379 bls. kraft pulp.

Castle & Overton, Inc., N. Amsterdam, Rotterdam, 170 bls. wood pulp.

Harriman Bros. & Co., Kifuku Maru, Hamburg, 500 bls. sulphite.

Johanson, Wales & Sparre, Inc., Kifuku Maru, Hamburg, 400 bls. chemical pulp, 62 tons.

E. J. Keller Co., Inc., Kifuku Maru, ——, 335 bls. wood pulp.

PULP WOOD

Chase National Bank, Troutpool, Archangel, 3607 cords.

WOOD PULP BOARDS

Wilkinson Bros. & Co., Inc., Gripsholm, Gothenburg, 34 rolls.

PHILADELPHIA IMPORTS

WEEK ENDING SEPTEMBER 6, 1930

Pagel, Horton & Co., Inc., Cliffwood, Husum, 5000 bls. sulphate, 1000 tons.

Price & Pierce, Ltd., Cliffwood, Orviken, 4800 bls. chemical pulp, 812 tons.

Neidich Process Co., Cliffwood, Helsingfors, 70 cs. tissue paper.

Amtorg Trading Corp., Skule, Leningrad, 1098 bls. rags.

E. J. Keller Co., Inc., Tomalva, ——, 54 bls. rags.

Bulkley, Dunton & Co., Kolsnaren, ——, 3775 bls. wood pulp.

——, Kolsnaren, Helsingfors, 108 rolls news print.

Johanson, Wales & Sparre, Inc., Kolsnaren, Sundsvall, 750 bls. sulphite.

Perkins, Goodwin & Co., Kolsnaren, Sundsvall, 625 bls. sulphite.

——, Kolsnaren, Sundsvall, 1350 bls sulphite.

E. M. Sergeant & Co., Kolsnaren, Hernosand, 1800 bls. sulphite; 900 bls. sulphate.

——, Kolsnaren, Hernosand, 1000 bls. mechanical pulp.

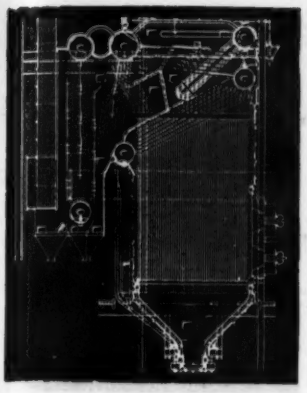
Fidelity Trust Co., Hinnoy, Barcelona, 42 bls. rags.

Brown Bros. & Co., Hinnoy, Marseilles, 39 bls. rags.

E. J. Keller Co., Inc., Seattle Spirit, ——, 515 bls. wood pulp.

E. J. Keller Co., Inc., Schodack, ——, 77 bls. rags.

(Continued on page 86)



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Rolled Phosphor Bronze and Copper Plates for Rotary Screens

Sole Manufacturers of the Union Witham Screen Plate Vat and Fastener

Imports of Paper and Paper Stock

(*Continued from page 84*)

BOSTON IMPORTS

WEEK ENDING SEPTEMBER 6, 1930

G. F. Malcolm & Co., Scythia, Liverpool, 27 cs. tissue paper.
E. Buterworth & Co., Inc., Mississippi, London, 104 bls. waste paper.
Brown Bros. & Co., Mississippi, London, 253 coils old rope.
Croker, Burbank Co., Mississippi, London, 352 bls. waste paper.

BALTIMORE IMPORTS

WEEK ENDING SEPTEMBER 6, 1930

Bulkley, Dunton & Co., Kolsnaren, ——, 4550 bls. wood pulp.
——, Kolsnaren, Sundsvall, 1350 bls. mechanical pulp.
——, Kolsnaren, Sundsvall, 2000 bls. chemical pulp.
Johanson, Wales & Sparre, Inc., Kolsnaren, Sundsvall, 1375 bls. sulphite.
Pagel, Horton & Co., Ltd., Kolsnaren, Hernosand, 450 bls. sulphite.
J. Andersen & Co., Kolsnaren, Hernosand, 300 bls. sulphite.

NEWPORT NEWS IMPORTS

WEEK ENDING SEPTEMBER 6, 1930

——, Cliffwood, Hernosand, 3000 bls. sulphite, 500 tons.

Paper Import Rulings on the Coast

SAN FRANCISCO, Cal., September 6, 1930.—Although the Import Committee of the American Paper Industry has its headquarters in New York, the manner in which it functions in behalf of the domestic mills in all parts of the country was shown by recent sessions of the United States Customs Court on the Pacific Coast.

Cases coming before the Customs Court included the following:

Stencil tissue paper classified for duty at San Francisco at 30 per cent as paper not specially provided for, claimed by importer to be dutiable as surface coated paper at 5 cents per pound and 15 per cent.

Japanese toilet paper imported at San Francisco classified for duty at 5 cents per pound and 15 per cent as tissue paper, claimed by importer to be dutiable as hand made paper at 3 cents per pound and 15 per cent.

The Importer claims that kraft wrapping paper imported at Los Angeles was not held dutiable on the proper quantity, claiming that the weight of the paper found by customs officials in excess of the invoiced weight was due to absorption of moisture and not to an intent o enter a larger quantity of paper than was invoiced.

Imitation parchment paper imported at Los Angeles claimed by importers to be dutiable as wrapping paper at 30 per cent instead of at 3 cents per pound and 15 per cent as imitation parchment, the ruling of the customs officials.

Kraft wrapping paper imported at Los Angeles claimed by importer to be dutiable as board at 10 per cent, instead of as wrapping paper at 30 per cent because it was 9 points in thickness.

Fancy surface coated paper imported at Los Angeles claimed by importer to be dutiable as book paper at ¼ cent per pound and 10 per cent instead of 4½ cents per pound and 17 per cent as held by the customs officials.

Boxed stationery from Austria imported at Los Angeles held by customs officials to have been undervalued through clerical error of the Viennese shipper.

Crystal Tissue to Start New Machine

The Crystal Tissue Company, Middletown, Ohio, will shortly place in operation their 136-inch Fourdrinier paper machine. This machine is designed to operate over a speed range of 125 to 500 fpm. producing tissue paper and will include a couch, main press, receiving dryer, main dryer section, calender stack and 2 drum upright reels.

The machine will be equipped with Westinghouse sectional electric drive, with individual motors applied to the couch, main press, dryer, and calender sections. This drive was designed to operate on the available d-c mill power circuits of 225 and 450 volts. A 4 to 1 speed range will be obtained by a special arrangement of motor shunt field control.

The drive will also provide for a special control feature which will permit the use of a "pick-up" felt between the couch and main press section. The individual motors will be provided with the latest type of Westinghouse carbon pile section speed regulators for maintaining the proper speed regulation between sections.

Louis Nicholson Killed in Paper Machine

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, September 9, 1930—Louis Nicholson, 21 years old, residing at 19 North street, Hamilton, was killed last Friday at the plant of the Champion Coated Paper Company, when his clothing was caught in the machinery of a large drier and he was drawn between the steel rolls up to his waist before the machinery could be stopped. His head and body were crushed and he was dead when removed from between the rolls.

Nicholson, who had been employed at the mills for some time, was engaged in cleaning paper away from beneath the dryer when the accident occurred. This was the first fatality at the mill for a long period. Every effort has been made to reduce accidents to the minimum and the mill record has been unusually good in this respect. In fact, all paper mill concerns in the Miami Valley are striving to make noteworthy records in keeping mishaps to the minimum.

Paper Demand Improves In Boston

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., September 8, 1930—An improvement in the demand for both fine and wrapping paper has developed since Labor Day. In some cases the volume of business in printing papers has shown a fairly substantial incerase and in others there has been at least a slight gain. There is a good call for bonds and ledgers along with the gradual upturn in the trend of industry as a whole. For the same reason, orders for kraft are being received in fairly satisfactory volume on the average.

A betterment in the box board situation has taken place, although there was no decided improvement during the last week. With the slight increase in buying, however, dealers feel more encouraged. Prices are holding well.

The paper stock market has shown no great improvement, if any, although values are steady in most cases and dealers live in hopes of better days to come. Book stock has been easing off and orders are difficult to secure.

Paper Mill Employment Decreases

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 3, 1930.—There was an employment decrease in paper, pulp and paper box mills in July compared with June, according to the Bureau of Labor Statistics, Department of Labor.

The Bureau received reports from 217 paper and pulp mills which gave their June employment at 60,927 decreasing in July to 58,437, a decrease of 4.1 per cent. Weekly payrolls in these same mills also decreased from $1,625,684 in June to $1,451,166 in July, a decrease of 10.7 per cent.

One hundred and ninety-one paper box factories also reported their June employment at 18,440 decreasing in July to 18,307, a decrease of 0.7 per cent. Weekly payrolls in these plants also decreased from $419,700 in June to $412,265 in July, a decrease of 1.8 per cent.

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SECTIONAL WHEEL KNIFE GRINDER

Widely used for grinding paper & Chipper Knives

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FACILITATES Type GRINDING 14" Segment COOLER WHEEL FASTER & "R"

SAMUEL C. ROGERS & CO.
222 Dutton Ave. Buffalo, N. Y.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, September 10, 1930.

Following an exceptionally quiet summer, there are slight signs of improvement in the local paper market. Although demand for the various grades of paper is light, there are a number of inquiries around for future needs and a general expansion of business is anticipated, in some quarters. While there is keen competition for desirable orders, prices are holding up fairly well.

July and August were both poor months in the newsprint market. Production in the North American mills is being maintained at approximately 65 per cent of weighted capacity, while shipments are going forward on an average of 61 per cent of rating, according to information gathered by the Newsprint Service Bureau. Stocks at the mills are 60 per cent higher than a year ago.

Some improvement was noticed in the paper board market after a dull August. Production of box board is being maintained at from 60 to 65 per cent of capacity. The price situation is practically unchanged. Book papers are exhibiting a strong undertone. Demand for bond papers is restricted. The coarse paper market is spotty. Southern kraft mills have been running at full capacity with the expectation of business picking up in the closing months of the year.

Mechanical Pulp

Steadiness prevails in the ground wood market, although the prevailing demand is mostly routine. Offerings of both domestic and imported mechanical pulp are not excessive, as production has been curtailed somewhat, both in this country and abroad, for various reasons. Prices are generally holding to formerly quoted levels and there is little talk of concessions around.

Chemical Pulp

Quietness reigned in the chemical pulp market during the past week. However, there are some inquiries in the market for both foreign and domestic grades and trading may become more lively in the near future. Contract shipments are going forward to the mills in fairly satisfactory volume for the time of year. No radical changes were recorded.

Old Rope and Bagging

The old rope market is not arousing much interest in the paper mills at present. Domestic and foreign old manila rope are in light request. Small mixed rope is moving in fair volume. Prices are steady and unchanged. The bagging market is in a sound position. Domestic and imported gunny No. 1 are now quoted at from $1.65 to $1.75. Scrap bagging is fairly active.

Rags

Demand for domestic rags is only moderately active. Cotton cuttings are moving into consumption in normal volume for the season. Roofing stock is in slightly better request than of late. Prices of the various grades of domestic rags are practically unchanged. The imported rag market continues dull, with the price situation little changed.

Waste Paper

The paper stock market continues irregular. Demand for the higher grades is better than for the lower grades. Soft white shavings are particularly active and, as offerings are limited, prices are steady to firm. Crumpled book stock is becoming more active than of late. Board mill interest in the lower grades is not very noticeable but the situation may improve before long.

Twine

Conditions in the local twine market are fairly satisfactory. While most of the business transacted of late has been along routine lines, trading should expand materially during the next few months. Supplies are moving into consumption in normal volume for the season. Prices are generally holding to schedule and shading is infrequent.

Boston Paper Trade Happenings

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., September 8, 1930—Franklin Dorset, advertising manager of the Albemarle Paper Manufacturing Company, Richmond, Va., gave talks at sales meetings held at the offices of Carter, Rice & Co. Corp. and of John Carter & Co., Inc., September 6, in regard to the Albemarle line of blotting papers. Mr. Dorset outlined the history of blotting paper, explaining the new simplification program. He discussed the advertising campaign for the year. Carter, Rice & Co. will stock the complete line, which is now coming in. John Carter & Co., Inc., have handled the Albemarle papers for some time and will continue to do so.

N. S. Clark, president of Knight, Allen & Clark, has returned from a vacation in New Hampshire.

John F. Wilson, advertising manager for Carter, Rice & Co. Corp., has returned from a vacation trip, which included Niagara Falls.

Edwin E. Martin Dead

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., September 6, 1930.—Edwin E. Martin, chief engineer of the Bagley & Sewall Company, died this week at his summer home near Guffins Bay following a brief illness. He had been in ill health since last winter although he had continued his duties at the local plant. He had been in the employ of the firm for the past thirty-six years and was regarded as one of the most valued employes.

He was born in 1876 and entered the employ of the Bagley & Sewall Company in his early youth. His first job was in the role of a blue print boy in the drafting department but the desire to advance himself soon won promotion. Later on he decided to take courses in mechanical drawing and engineering and incidentally he was made chief draftsman. A few years ago when Charles W. Valentine was made president it was decided to promote Mr. Martin to the position as chief engineer in which capacity he has served since.

Fir-Tex Mill Makes First Shipment

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., August 23, 1930—The first shipment by water of the new Fir-Tex Insulating Board products, St. Helens, went forward on the steamer Wallingford late this month for California points.

BiggsGlobe, Cylinder and Tumbling Digesters, Welded or Riveted Stationary Digesters Penstocks

Write for "Unusual Steel Plate Construction"

Biggs Boiler Works Co.
AKRON, OHIO

BIGGS ROTARIES *for years of dependable cooking and bleaching..*

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Perforated Metal Screens
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PAPER TESTS
In Accord with T.A.P.P.I Standard Methods
Oils — Paper — Pulp Water — Microphotograph
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A COMBINED LOADER-CARRIER-UNLOADER THAT WILL SAVE YOU MONEY AND PREVENT ACCIDENTS
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Western Representative F. H. GODFREY, 111 Lemon St., Wilmington, Mass.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, September 10, 1930.

BLANC FIXE.—Conditions in the blanc fixe market are fairly satisfactory. The contract movement is normal. Prices remain unchanged. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk, while the powder is selling at from 3¾ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Contract shipments are going forward in seasonal volume. Prices are holding to schedule, in most instances. Bleaching powder is still quoted at from $2.00 to $2.35 per 100 pounds, in drums, at works.

CASEIN.—Demand for casein is restricted at present. Domestic standard ground is still quoted at 13½ cents and finely ground at 15 cents per pound. Argentine standard ground is selling at 13½ cents and finely ground at 14½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Offerings of caustic soda are sufficient to take care of current needs. Prices generally remain unchanged. Solid caustic soda is quoted at from $2.90 to $2.95, while the flake and the ground are selling at from $3.30 to $3.35 per 100 pounds, in large drums, at works.

CHINA CLAY.—Steadiness prevails in the china clay market. Shipments against contract are moving in satisfactory volume. Prices are unchanged. Imported china clay is quoted at from $15 to $25 per ton, ship side, while domestic paper making clay is selling at from $8 to $13 per ton, at mine.

CHLORINE.—Some improvement was noticed in the chlorine market. The contract movement was well up to average for the time of year. Prices remain unchanged. Chlorine is quoted at from $2.40 to $2.45 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market was more active and prices were firmer. The grades of gum rosin used in the paper mills are now quoted at from $6.10 to $6.15 per 280 pounds, in barrels, at works. Wood rosin is still selling at $4.10 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Supplies of salt cake are moving in satisfactory volume for the season. Demand should be active for the balance of the year. Prices remain unchanged. Salt cake is quoted at from $22 to $25 per ton, while chrome salt cake is selling at from $20 to $21 per ton, in bulk, at works.

SODA ASH.—The soda ash market is exhibiting a fairly strong undertone. Offerings are about sufficient to take care of current needs. Prices remain unchanged. Contract quotations on soda ash, in car lots, at works, are as follows: in bags, $1.32½, and in barrels, $1.55 per 100 pounds.

STARCH.—Although the corn market is firmer, the position of the starch market is practically unchanged. Contract shipments are going forward to the paper mills in fair volume. Prices remain unaltered. Special paper making starch is quoted at $3.77, in bags, and at $4.04 per 100 pounds, in barrels.

SULPHATE OF ALUMINA.—Trading in the sulphate of alumina market is moderately active. The contract movement is seasonal. Prices generally remain unchanged. Commercial grades are quoted at from $1.40 to $1.55, and iron free at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is in a sound position. Prices are steady. Sulphur is quoted at $18 per ton, at mine, on orders of 1,000 tons, or over, on yearly contracts, and at $20 per ton for any smaller quantity over that period. On spot and nearby car loads the quotation is $21 per ton.

TALC.—Demand for talc is fairly persistent at present. Offerings are adequate to take care of the prevailing request. Prices are steady to firm. Domestic talc is quoted at from $16 to $18 per ton, in bulk, while imported talc is selling at from $18 to $20 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	11.00	@	38.00
Bonds	9.00	@	53.25
Writings—			
Extra Superfine	14.00	@	32.00
Superfine	14.00	@	32.00
Tub sized	10.00	@	15.00
Engine sized	8.00	@	11.00
Book, Cased—			
S. & S. C.	6.00	@	7.50
M. F.	5.75	@	7.00
Coated and Enamel	7.50	@	12.00
Lithograph	7.50	@	12.00
Tissues—Per Ream—			
White No. 1	.75	@	1.00
Anti-Tarnish	1.35	@	1.90
Colored	1.00	@	2.00
White No. 2	.75	@	.80
Kraft	1.00	@	1.10
Manila	.75	@	.80
Kraft—			
No. 1 Domestic	5.75	@	6.25
No. 2 Domestic	3.75	@	5.00
Southern	3.50	@	4.50
Imported	6.50	@	7.00
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.75	@	5.25
No. 2 Wood	4.00	@	4.50
Butchers	3.75	@	4.25
Fibre Papers—			
No. 1 Fibre	5.00	@	5.50
No. 2 Fibre	4.75	@	5.25
Common Bogus	2.75	@	3.00
Screenings	3.00	@	3.25
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs.	13.00	@	16.00
Bleached, basis 20 lbs.	15.00	@	16.00

(Delivered New York)

News, per ton—			
Rolls, contract	62.00	@	—
Rolls, spot	62.00	@	—
Sheets	67.00	@	—
Side Runs	47.00	@	52.00
Boards—per ton—			
News	37.50	@	—
Straw	44.00	@	—
Chip	35.00	@	—
Binders' Boards	65.00	@	70.00
100 Test Jute Liner	37.50	@	40.00
85 Test Jute Liner	47.50	@	50.00
Sgl. Mla. Lt. Chip	47.50	@	50.00
Wood Pulp Boards	75.00	@	80.00

(F. o. b. Mill)

Mechanical Pulp

(On Dock)

No. 1 Imported—			
Moist	28.00	@	30.00
Dry	30.00	@	32.00

(F. o. b. Mill)

No. 1 Domestic	26.00	@	30.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	3.00	@	4.25
Easy Bleaching	2.60	@	2.80
No. 1 strong unbleached	2.30	@	2.65
Mitscherlich unbleached	2.40	@	2.85
No. 2 strong unbleached	2.20	@	2.35
No. 1 Kraft	1.65	@	2.15
No. 2 Kraft	1.55	@	1.65
Sulphate—			
Bleached	3.40	@	3.85

(F. o. b. Pulp Mill)

Sulphite (Domestic)—			
Bleached	2.65	@	4.75
Easy Bleaching Sulphite	2.55	@	2.75
News Sulphite	2.35	@	2.60
Mitscherlich	2.75	@	3.25
Kraft (Domestic)	2.10	@	3.30
Soda Bleached	2.90	@	3.20

Domestic Rags

New Rags

(Prices to Mill f. o. b N. Y.)

Shirt Cuttings—			
New White, No. 1	8.75	@	9.25
New White, No. 2	7.25	@	7.75
Silesias No. 1	6.75	@	7.00
New Unbleached	9.50	@	10.00
New Blue Prints	5.25	@	5.50
New Soft Blacks	4.50	@	5.00
Blue Overall	6.75	@	7.25
Washables	4.25	@	4.75
Fancy	4.75	@	5.25
Mixed Khaki Cuttings	4.75	@	5.25
Pink Corset Cuttings	8.00	@	8.50
O. D. Khaki Cuttings	5.15	@	5.75
Men's Corduroy	3.75	@	4.25
New Mixed Blacks	3.50	@	3.75

Old Rags

White, No. 1—			
Repacked	5.50	@	6.00
Miscellaneous	4.50	@	5.00
White, No. 2—			
Repacked	3.00	@	3.50
Miscellaneous	2.50	@	2.75
St. Soiled, White	2.00	@	2.15
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.75	@	2.00
Black Stockings	3.25	@	3.75
Roofing Rags—			
Cloth Strippings	1.50	@	1.60
No. 1	1.50	@	1.60
No. 2	1.15	@	1.25
No. 3	1.10	@	1.20
No. 4	1.00	@	1.10
No. 5A	.90	@	1.05

Foreign Rags

New Rags

New Dark Cuttings	2.50	@	3.00
New Mixed Cuttings	2.25	@	2.75
New Light Silesias	6.75	@	7.00
Light Flannelettes	6.75	@	7.25
Unbleached Cuttings	9.00	@	9.50
New White Cuttings	9.00	@	9.50
New Light Oxfords	7.00	@	7.50
New Light Prints	5.00	@	5.50

Old Rags

No. 1 White Linens	7.25	@	8.00
No. 2 White Linens	5.75	@	6.75
No. 3 White Linens	4.75	@	5.25
No. 4 White Linens	3.00	@	3.50
No. 1 White Cotton	5.50	@	6.25
No. 2 White Cotton	4.50	@	5.00
No. 3 White Cotton	3.00	@	4.00
No. 4 White Cotton	1.75	@	2.10
Extra Light Prints	2.75	@	3.00
Ord. Light Prints	2.15	@	2.40
Med. Light Prints	1.80	@	2.00
Dutch Blue Cottons	2.15	@	2.30
French Blue Linens	2.65	@	2.75
German Blue Linens	2.30	@	2.50
German Blue Cottons	1.90	@	2.00
Checks and Blues	1.75	@	1.90
Lindsay Garments	1.30	@	1.40
Dark Cottons	1.00	@	1.10
Old Shopperies	.90	@	1.00
New Shopperies	.95	@	1.05
French Blues	1.95	@	2.05

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.65	@	1.75
Domestic	1.65	@	1.75
Wool Tares, light	1.60	@	1.65
Wool Tares, Heavy	1.60	@	1.70
Bright Bagging	1.60	@	1.70
Small Mixed Rope	1.25	@	1.40
Manila Rope—			
Foreign	3.00	@	3.25
Domestic	3.50	@	3.75
New Burlap Cut	2.25	@	2.50
Hessian Jute Threads—			
Foreign	3.50	@	4.00
Domestic	3.25	@	3.50

Old Waste Papers

(F. o. b. New York)

Shavings—			
Hard, white, No. 1	3.00	@	3.25
Hard, white, No. 2	2.40	@	2.55
Soft, white, No. 1	2.80	@	2.90
White envelope cuttings	2.90	@	3.10
Flat Stock—			
Stitchless	1.30	@	1.40
Overissue Mag.	1.30	@	1.40
Solid Flat Book	1.20	@	1.30
Crumpled No. 1	.90	@	1.00
Solid Book Ledger	2.00	@	2.10
Ledger Stock	1.30	@	1.40
New B. B. Chips	.35	@	.45
Manilas—			
New Env. Cut.	2.40	@	2.60
New Cuttings	1.50	@	1.75
Extra No. 1 old	1.25	@	1.35
Print	.60	@	.65
Bogus Wrapper	.60	@	.65
Container	.40	@	.50
Old Kraft Machine—			
Compressed bales	1.30	@	1.60
News—			
No. 1 White News	1.77	@	1.87
Strictly Overissue	.50	@	.55
Strictly Folded	.40	@	.45
No. 1 Mixed Paper	.22	@	.27
Common Paper	.15	@	.20

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50 Church St. Hudson Terminal Bdlg.
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Twines
(F. o. b. Mill)

Cotton—			
No. 1	.39	@	.40
No. 2	.37	@	.38
No. 3	.36	@	.37
B. C., 18 basis	.38	@	.40
A. B. Italian, 18 basis	.48	@	.53
Finished Jute—			
Dark 18 basis	.24	@	.25
Light 18 basis	.27	@	.28
Jute Wrappings, 3-6 Ply—			
No. 1	.19	@	.21
No. 2	.18	@	.20
Tube Rope—			
4-ply and larger	.16	@	.17
Fine Tube Yarn—			
5-ply and larger	.21	@	.25
4-ply	.25	@	.29
3-ply	.28	@	.32
Unfinished India—			
Basis	.13	@	.14
Paper Makers Twine Balls	.11	@	.12
Box Twine, 2-3 ply	.15	@	.17
Jute Rope	.17	@	.19
Amer. Hemp, 6	.29	@	.31
Sisal Hay Rope—			
No. 1 Basis	.16	@	.18
No. 2 Basis	.14	@	.16
Sisal Lath Yarn—			
No. 1	.14	@	.16
No. 2	.12	@	.14
Manila Rope	.22	@	.24

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	5.00	@	5.50
Southern Kraft	3.75	@	4.00
No. 2 Kraft	3.75	@	4.00
Wood Tag Boards	.04¼	@	.06¾
Sulphite Sreenings	.03	@	.03¾
Manila Tissue—			
24x36 Sheet	.07	@	.07¼
White Tissue—			
20x30 Sheet	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	62.00	@	—
Sheets	67.00	@	—
Boards, per ton—			
Plain Chip	37.50	@	42.50
Solid News	47.50	@	—
Solid News	40.00	@	45.00
Manila Lined Chip	50.00	@	55.00
Container Lined—			
85 Test	65.00	@	70.00
100 Test	70.00	@	—

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.40
White Env. Cut-			
No. 1 Soft Shavings	2.10	@	2.15
No. 1 Mixed	.30	@	.35
No. 2 Mixed	.25	@	.35
Ledger & Writings	1.25	@	1.35
Solid Books	1.05	@	1.10
Blanks	1.60	@	1.65
Krafts	1.30	@	1.40
New Kraft Cuts	1.50	@	1.70
Manila Envelope Cuttings	1.65	@	1.70
Ex. No. 1 Manila	1.30	@	1.45
Print Manila	.45	@	.50
Folded News (over-issue	.40	@	.45
Old Newspapers—			
No. 1	.35	@	.40
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.30	@	.35
Roofing Stocks—			
(F. o. b. Chicago, net cash)			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.05	@	.40
Ledgers	.08	@	.40
Writings—			
Superfine	.12½	@	.18
Extra fine	.18	@	.22
Fine	.17	@	.26
Fine, No. 2	.15	@	.25
Fine, No. 3	.09	@	.20
Book, M. F.	.05	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.09	@	.16
Coated Lithograph.	.07	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.03½	@	.05½
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06¾
No. 2 Kraft	.03¾	@	.04¾
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.03½
Common Bogus	.03¼	@	.04
(Delivered Philadelphia)			
News Print Rolls	62.00	@	—
Straw Board	52.50	@	70.00
News Board	37.50	@	38.50
Chip Board	32.50	@	35.00
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	75.00		
No. 2, per ton	70.00		
Carload lots	68.00	@	70.00
Tarred Felts—			
Regular	55.50	@	57.00
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.10½	@	.11
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07	@	.09
Black Silesia, soft	.05	@	.05½
New Unbleached	.10½	@	.11
Washable, No. 1	.04½	@	.05
Blue Overall	.07½	@	.08
Cottons—According to grades—			
Washable, No. 2	.03	@	—
New Blue	.03	@	.03½
Fancy	.05½	@	.06
New Black Soft	.05	@	.05¾
New Light Seconds	.02½	@	.03
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.05½	@	.05¾
No. 2 Mixed	.04½	@	.04¾
Corduroy	.03	@	.03½
New Canvas	.08½	@	.09
New Black Mixed	.03¾	@	.04½

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	3.50	@	4.00
Sisal Rope	1.50	@	—
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.65	@	2.75
No. 2 Hard White	2.30	@	2.50
No. 1 Soft White	2.25	@	2.50
No. 2 Soft White	1.40	@	1.60
No. 1 Mixed	.90	@	1.00
No. 2 Mixed	.60	@	.70
Solid Ledger Stock	1.55	@	1.65
Writing Paper	1.05	@	1.25
No. 1 Books, heavy	1.00	@	1.20
No. 2 Books, light	.90	@	1.00
No. 1 New Manila	2.15	@	2.30
No. 1 Old Manila	1.50	@	1.60
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.35	@	1.40
Common Paper	.25	@	.35
No. 1 Mixed Paper	.25	@	.30
Straw Board, Chip	.35	@	.40
Binders Board, Chip	.35	@	.45
Corrugated Board	.50	@	.60
Overissue News	.45	@	.50
Old Newspaper	.25	@	.30

Domestic Rags (Old)

White No. 1—			
Repacked	4.25	@	4.50
Miscellaneous	3.50	@	3.75
M. G.	6.00	@	—
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.60	@	1.80
Black Stockings			
(Export)	3.90	@	4.25
Roofing Stock—			
Foreign No. 1	1.25	@	1.30
Repacked	.80	@	.90
No. 2	.70	@	.75
No. 3 (Roofing)	.30	@	.40
No. 4	.30	@	.40
No. 5A	.70	@	.75
B	.40	@	.60
C	.25	@	.30

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¾	@	.06
No. 2 Kraft	.03¾	@	.05
(Less car-freight to Boston)			
Southern Kraft	.03¾	@	.04¼
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¾
Delivered New England points			
News Print Rolls	61.50	@	—
Straw Boards, rolls .009			52.50
Straw Board in Sheets, basis 35s to 70s	54.50	@	55.00
Filled News Board	37.50	@	40.00
Chip Board	35.00	@	37.50
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated Newsboard Bender	65.00	@	80.00
Wood Pulp Board	75.00	@	80.00
Binder Boards	70.00	@	75.00
(F. o. b. Mill)			
Tarred Felts—			
Regular, carload lots	65.00	@	—

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.25	@	3.75
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.50	@	2.60
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	—	@	2.25
No. 1 Books, Heavy	1.00	@	—
No. 1 Books, Light	.85	@	—
Manila Env. Cuttings	2.00	@	2.25
No. 1 Old Manila	.90	@	1.00
White Blank News	1.50	@	1.60
Old Kraft	1.35	@	1.45
Print Manila	.75	@	.80
No. 1 Mixed Paper	.20	@	.25
Overissue News	.45	@	.50
Old Newspapers	.37½	@	.40
Box Board, Chip	.50	@	.55
Corrugated Boxes	—	@	.45

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	—	@	1.50
Domestic	1.50	@	—
Manila Rope—			
Foreign	3.00	@	3.25
Domestic	—	@	3.50
Transmission Rope	2.35	@	2.50
Mixed Strings	.90	@	1.00
Jute Wool Strings	.90	@	1.00
Jute Carpet Threads	1.00	@	1.10
Scrap Burlaps	1.25	@	1.40
Scrap Sisal	1.50	@	1.65
Scrap Sisal for shredding	1.75	@	2.00
Wool Tares, heavy	1.60	@	—
New Burlap Cutting	1.75	@	2.00
Australian Wool Pouches	2.25	@	3.00

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.08	@	.08½
New White No. 2	—	@	.06
Silesias No. 1	.06	@	.06¼
New Unbleached	—	@	.09¾
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades			
Blue Overalls	.06¼	@	.06¾
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04¾
O. D. Khaki	.05	@	—
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.75	@	3.00
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.75	@	1.90
Black Stockings	—	@	4.00
Roofing Stock—			
No. 1	1.25	@	1.50
No. 2	.90	@	1.00
No. 3	.85	@	.90
No. 4	.75	@	.85

Foreign Rags
(F. o. b. Boston)

Dark Cottons	.95	@	1.00
New No. 1 Shirt Cuttings	8.50	@	9.00
Dutch Blues	2.25	@	2.50
Lace Curtains	4.50	@	4.75
New Checks & Blues	4.25	@	4.60
Old Fustians	1.90	@	2.00
Old Linsey Garments	1.20	@	—

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¼	@	—
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	7.50	@	—
No. 2 M. F. (carloads)	7.25	@	—
No. 3 M. F. (carloads)	7.00	@	—
No. 1 S. C. (carloads)	8.00	@	—
No. 2 S. C. (carloads)	7.75	@	—
No. 3 S. C. (carloads)	7.50	@	—
No. 1 Coated and Litho	13.25	@	—
No. 2 Coated and Litho	12.25	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.50	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
White, No. 2	2.00	@	2.25
News, per ton—			
Rolls (contract)	61.50	@	62.00
Sheets	67.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	60.00	@	—
Sulphite news grade	60.00	@	—
Sulphite, bleached	72.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book Shavings	2.85	@	—
White Blk. News	1.60	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.40	@	—
Light and Crumpled Book Stock	1.25	@	—
Ledgers and Writ-			
Solid Ledgers	1.50	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.85	@	—
Strictly Folded	.85	@	—
No. 1 Mixed Paper	.65	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09¼	@	.10
Fancy Shirt Cuttings	.04	@	.04¼

Advertising matter paged consecutively with text, has been removed here to lessen the bulk of this volume.

INDIANAPOLIS
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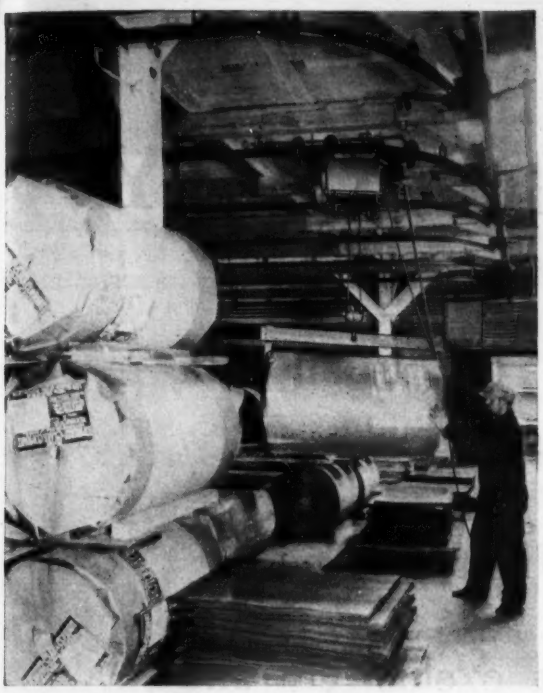

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